Fisheries and Oceans Canada
Pêches et Océans Canada

THE GULLY MARINE PROTECTED AREA MANAGEMENT PLAN

Canada

ACKNOWLEDGEMENTS

This Management Plan was prepared by the Oceans and Coastal Management Division of the Department of Fisheries and Oceans (DFO) Maritimes Region with the assistance of the Gully Advisory Committee. Other sectors within DFO and the Canada-Nova Scotia Offshore Petroleum Board also contributed to the writing and review of this Management Plan.

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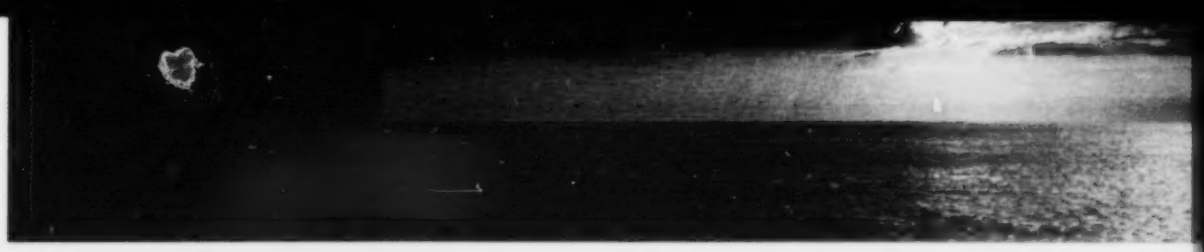

EXECUTIVE SUMMARY

BACKGROUND

In May 2004, Canada's Minister of Fisheries and Oceans designated the Gully Marine Protected Area (MPA) through regulations under the *Oceans Act*. The Gully is a deep submarine canyon found off the coast of Nova Scotia, near Sable Island. It was designated a candidate MPA in 1998. In the intervening period, several studies and assessments reviewed the area's suitability for an MPA designation.

The large, steep-sided canyon is a unique environment on the Atlantic coast of Canada. Its waters provide habitat for a diverse array of species, including cold-water corals, endangered northern bottlenose whales, and many different species of fish.

The MPA is a contribution towards Canada's commitment of implementing a national network of marine protected areas. As well, the MPA supports regional marine planning efforts and is linked closely with the development of an integrated ocean management plan (the ESSIM Plan) for the eastern Scotian Shelf.

The Gully Management Plan (the Plan) was developed to support the MPA Regulations (the Regulations) and provide guidance to DFO, other regulators, marine users, and the public on protecting and managing this important ecosystem. The Plan provides a multi-year framework that includes an overall vision, objectives, and priorities for conservation. It also includes a description of the regulations, boundaries and zones, and specific actions to protect the Gully ecosystem.

VISION AND OBJECTIVES FOR THE MPA

The overarching vision for the Gully is:

> *To protect the marine ecosystem of the Gully MPA for future generations by providing effective programs for management, conservation, research, monitoring, and stewardship.*

Objectives for the Gully MPA have been organized according to three main themes: conservation objectives, management and stewardship objectives, and research and monitoring objectives. These are as follows:

Conservation

- Protect the health and integrity of the Gully ecosystem:
  - Protect the natural biodiversity of the Gully.
  - Protect the physical structure of the Gully and its physical and chemical properties.
  - Maintain the productivity of the Gully ecosystem.

Management and Stewardship

- Establish effective management of the Gully MPA:
  - Promote collaboration among all users, regulators and other interests.
  - Involve stakeholders and the general public in the management of the MPA.
  - Establish co-operative agreements with responsible regulatory authorities to meet objectives for the MPA.
  - Ensure that human activities within the MPA are consistent with Regulations and the conservation objectives.
  - Monitor and evaluate the design, management, and effectiveness of the MPA on a regular basis to ensure that it is meeting defined objectives.

- Promote stewardship activities:
  - Increase understanding of the Gully ecosystem among regulators, user groups and the public.
  - Promote active participation and engagement in management and research.

Research and Monitoring

- Increase our understanding of the Gully and the potential for human impacts on this ecosystem.
- Foster collaboration and communication among managers and natural and social scientists.
- Provide managers with accurate and timely

information on the state of the Gully ecosystem and potential threats to conservation and management objectives.

The MPA has adopted the guiding principles found in Canada's national policy and operational framework for integrated management. These are ecosystem-based management, collaboration and stewardship, the precautionary approach, sustainability, integrated management, knowledge-based decision-making, and adaptive planning and management.

REGULATIONS

The Regulations establish the MPA boundary and three internal management zones. Zone 1 encompasses the core canyon area and is afforded the highest level of protection. Zone 2 includes the canyon walls, the head of the canyon, and the deep water area of the abyssal plain. Zone 3 includes the shallow banks on either side of the canyon. The entire MPA is 2364 square kilometres in size.

General prohibitions within the MPA Regulations make it illegal for any person to:

> *disturb, damage or destroy in the Gully Marine Protected Area, or remove from it, any living marine organism or any part of its habitat* [sec. 4(a)].

The general prohibitions also apply to the seabed in order to protect benthic (ocean floor) organisms and habitats. Activities occurring in the vicinity of the MPA must not result in effects in the MPA that contravene the Regulations. Where possible, existing processes will be used to review activities proposed for the area around the MPA.

Certain activities are excepted from the Regulations and there are provisions for an activity approval process to permit other activities to occur. Excepted activities include certain types of commercial fishing (in zones 2 and 3 only), the passage of ships, and activities carried out by the Government of Canada for national security, safety, law enforcement, and emergency response. The Plan provides guidance on the Regulations as they pertain to particular sectors.

Violation of the Regulations carries penalties under section 37 of the *Oceans Act*. If other legislation is also violated, convictions can result in fines and imprisonment under that legislation as well.

MANAGEMENT ROLES AND RESPONSIBILITIES

DFO has a lead role in managing and administering the MPA and enforcing the Regulations. However, other government regulators will also play a role in managing activities in and around the MPA and supporting the enforcement of the Regulations. The Gully Advisory Committee, made up of government and non-government stakeholders, provides advice and information to the government on the MPA and related activities. The Oceans and Coastal Management Division (OCMD) will coordinate management and administration of the MPA.

MANAGEMENT PLAN REVIEW

Adaptive management is a guiding principle for the management of the MPA. OCMD will consider the advice from the Gully Advisory Committee and results from new research and will adapt activities where necessary on a continuous basis. OCMD will produce an annual report as part of an ongoing review process. The reports will track the implementation of activities identified in the management plan and identify new or emerging priorities. A complete plan review will take place in 2012.

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PURPOSE AND BACKGROUND

1.1 INTRODUCTION

The Gully[1] submarine canyon, with its abundant and diverse wildlife, is a marine environment like no other in Canada, perhaps like no other in the North Atlantic. Its physical habitats and ecology require special management and protection. In May 2004, Canada's Minister of Fisheries and Oceans designated the Gully Marine Protected Area through regulations under the *Oceans Act* (Appendix 1).

The Gully is found off the coast of Nova Scotia, near Sable Island (Figure 1). It has been an area of conservation interest since the early 1990s. It was designated a candidate[2] Marine Protected Area (MPA) in 1998. Since the initial candidacy designation, a great deal has been learned about the ecosystem of the Gully and its human uses, and the various governmental and non-governmental interests with a stake in its long term management and protection have been identified. In early 2003, the multi-stakeholder Gully Advisory Committee was established to provide ongoing advice on the Marine Protected Area evaluation process, conservation planning, and

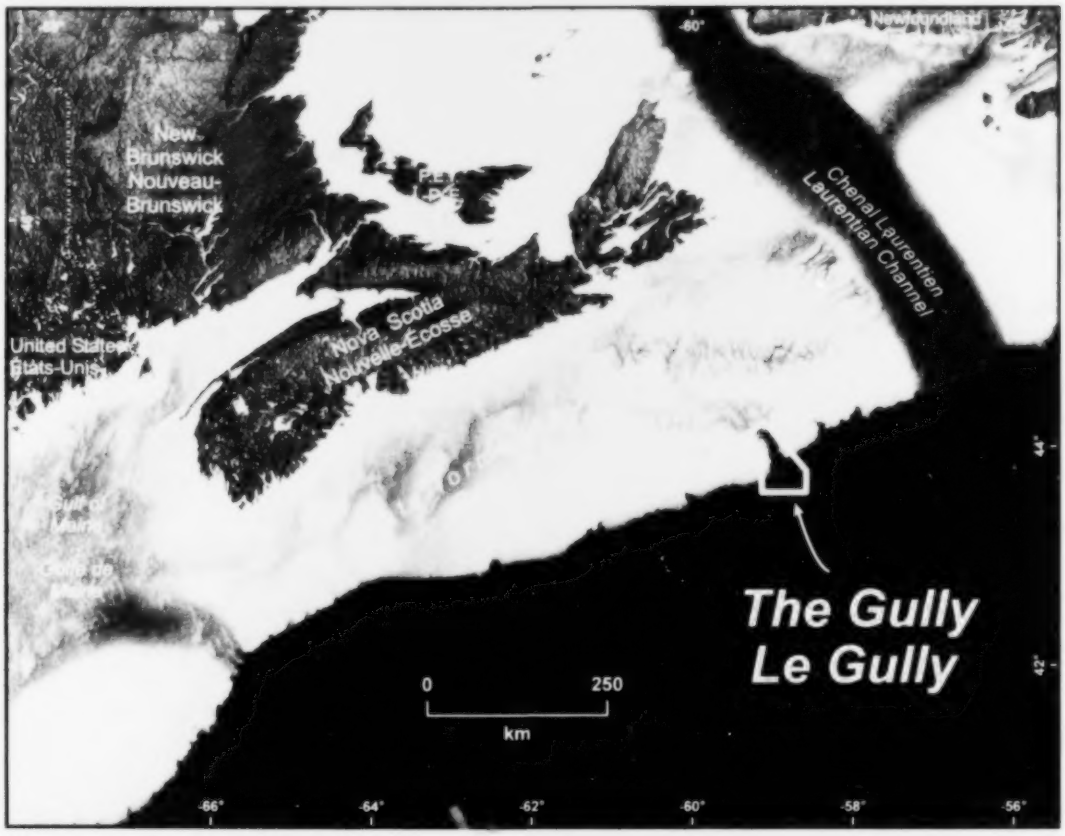

Figure 1. The location of the Gully

1. The name "Sable Gully" is used by some fishers and mariners because the canyon is near Sable Island. The official name is the Gully.
2. The terms "pilot MPA" and "Area of Interest" (AOI) have also been used to refer to the candidate MPA status.

1

PURPOSE AND BACKGROUND

1.1 INTRODUCTION

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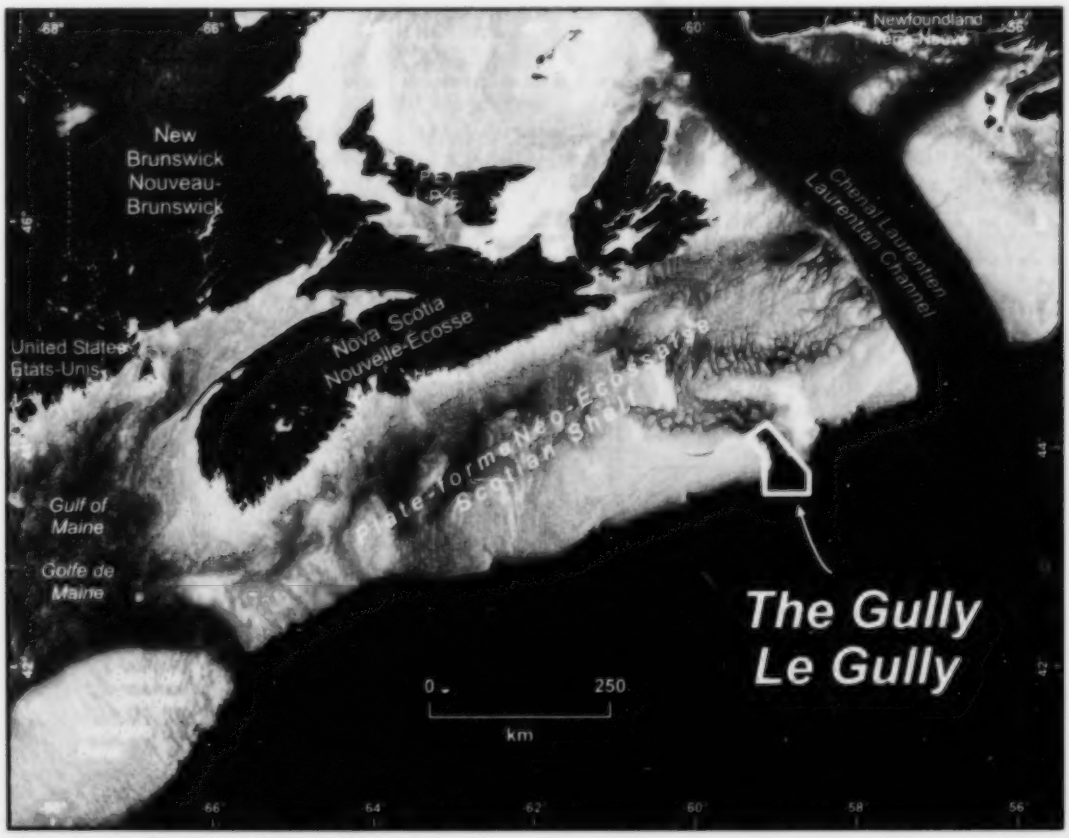

Figure 1. The location of the Gully

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implementation of a management plan for the Gully. The use of protected areas in the marine environment has been growing around the world as governments have increasingly come to appreciate their value as precautionary and proactive means of conserving important ecosystems. The Gully Marine Protected Area Regulations provide for the direct management and legal protection of the Gully's unique, diverse, and sensitive deep sea canyon ecosystem. Although there were some conservation efforts in the Gully area prior to the MPA designation, environmental quality and habitat concerns were not being addressed in a comprehensive manner or providing the enduring protection required. The designation has provided an opportunity to harmonize efforts across different groups and allowed habitat and other environmental quality concerns to be addressed across the board.

The Plan was developed to support the MPA Regulations and provide guidance to DFO, other regulators, marine users, and the public on protecting this important ecosystem and managing the area around it. The Plan provides a multi-year framework that includes an overall vision, objectives, and priorities for management. It also includes a description of the Regulations, boundaries and zones, and specific actions to protect the Gully ecosystem. As the health of the Gully is closely tied to the surrounding environment, the Plan helps to guide decision-making for activities in and around the Gully ecosystem. We are only beginning to understand the complexities of this ecosystem and a precautionary approach to management is a consistent theme throughout the Plan.

DFO is the lead organization for the protection of the Gully. Reflecting that, the Plan was prepared by the DFO Maritimes Region with guidance from the Gully Advisory Committee. The advisory committee is made up of representatives from DFO and other government departments, as well as stakeholder groups.

The Plan is divided into five sections:

Purpose and Background describes background on the ecology of the Gully, its ecological and economic values, a history of conservation activities to date, and an overview of MPA boundaries and the Regulations.

Vision, Objectives, and Guiding Principles describes the vision and objectives for the MPA.

Priority Conservation Issues introduces key conservation priorities for this management plan.

Managing the Gully Marine Protected Area provides guidance for current and future uses of the area. It explains what the *Oceans Act* Regulations mean in general and for various sectors and activities.

Administration outlines the decision-making responsibilities and relationships for managing activities

LIST OF ABBREVIATIONS

AOI	Area of Interest
CMA	Coastal Management Area
DFO	Fisheries and Oceans Canada
EBSA	Ecologically and Biologically Significant Area
EEZ	Exclusive Economic Zone
ESSIM	Eastern Scotian Shelf Integrated Management
GIS	Geographic Information System
IM	Integrated Management
LOMA	Large Ocean Management Area
MPA	Marine Protected Area
NAFO	Northwest Atlantic Fisheries Organization
OCMD	Oceans and Coastal Management Division (of DFO)
RCOM	Regional Committee on Ocean Management
SAC	Stakeholder Advisory Council

BOX 1: THE *OCEANS ACT* ON MARINE PROTECTED AREAS

35. (1) A marine protected area is an area of the sea that forms part of the internal waters of Canada, the territorial sea of Canada or the exclusive economic zone of Canada and has been designated under this section for special protection for one or more of the following reasons:

(a) the conservation and protection of commercial and non-commercial fishery resources, including marine mammals, and their habitats;
(b) the conservation and protection of endangered or threatened marine species, and their habitats;
(c) the conservation and protection of unique habitats;
(d) the conservation and protection of marine areas of high biodiversity or biological productivity; and
(e) the conservation and protection of any other marine resource or habitat as is necessary to fulfill the mandate of the Minister.

(2) For the purposes of integrated management plans referred to in sections 31 and 32, the Minister will lead and coordinate the development and implementation of a national system of marine protected areas on behalf of the Government of Canada.

(3) The Governor in Council, on the recommendation of the Minister, may make regulations
(a) designating marine protected areas; and
(b) prescribing measures that may include but not be limited to
(i) the zoning of marine protected areas,
(ii) the prohibition of classes of activities within marine protected areas, and
(iii) any other matter consistent with the purpose of the designation.

36. (1) The Governor in Council, on the recommendation of the Minister, may make orders exercising any power under section 35 on an emergency basis, where the Minister is of the opinion that a marine resource or habitat is or is likely to be at risk to the extent that such orders are not inconsistent with a land claims agreement that has been given effect and has been ratified or approved by an Act of Parliament.
(2) An order made under this section is exempt from the application of sections 3, 5 and 11 of the Statutory Instruments Act.
(3) An order made under this section that is not repealed ceases to have effect 90 days after it is made.

37. Every person who contravenes a regulation made under paragraph 35(3)(b) or an order made under subsection 36(1) in the exercise of a power under that paragraph

(a) is guilty of an offence punishable on summary conviction and liable to a fine not exceeding $100,000; or
(b) is guilty of an indictable offence and liable to a fine not exceeding $500,000.

in and around the Gully. It also briefly describes some of the non-regulatory management actions.

This Plan will serve as the long-term framework upon which more detailed and additional operational plans for the area can be developed to address specific issues. It will be updated as we gain further understanding of the ecosystem and the impacts of human activities.

1.2 LEGISLATIVE BASIS FOR THE MARINE PROTECTED AREA

The legislative basis for the establishment of the Gully Marine Protected Area and this Plan is drawn from Canada's *Oceans Act*. Several sections under Part II of the Act, "Oceans Management Strategy," support the development of marine protected areas and management plans for those areas (Box 1). This part of the Act also outlines penalties for those who violate MPA Regulations. Management of the Gully Marine Protected Area is further supported by related measures in the *Oceans Act*, including provisions for developing integrated management plans and regulations on marine environmental quality.

1.3 OVERVIEW OF MARINE PROTECTED AREA REGULATIONS

PURPOSE OF THE MPA

In many other parts of the world, submarine canyons have been recognized as special habitats supporting communities or individual species not found in nearby areas. On the Scotian Shelf, the Gully stands out among submarine canyons. While there are other submarine canyons along the edge of the Scotian Shelf, none of them are as large as the Gully or stretch as far back into the shelf. Because of its shape, size, and physical oceanography, the Gully contains many diverse habitats and is highly productive. The Gully submarine canyon is an area like no other in Canada, perhaps like no other in the North Atlantic.

The *Oceans Act* gives the Governor-in-Council the authority to designate Marine Protected Areas by regulation, for any of the following reasons:

(a) the conservation and protection of commercial and non-commercial fishery resources and their habitats;

(b) the conservation and protection of endangered or threatened species and their habitats;

(c) the conservation and protection of unique habitats;

(d) the conservation and protection of marine areas of high biodiversity or biological productivity; and

(e) the conservation and protection of any other marine resource or habitat as is necessary to fulfil the mandate of the Minister of Fisheries and Oceans.

Although any of the criteria may be used to establish an MPA, the Gully meets all of them. It is known to be important for commercial fish species and a variety of non-commercial species. The area has a higher diversity of demersal (bottom) fish than adjacent areas of the eastern Scotian Shelf. It is a particularly important area for halibut. The Gully also has high concentrations of less well-known fish, including a variety of mesopelagic fishes (small fish such as lanternfish that inhabit the water column).

The Gully is an important habitat for the endangered northern bottlenose whale and other endangered and threatened marine mammals have also been sighted there. Other species or assemblages of species with limited distributions in Atlantic Canada can also be found in the Gully, such as cold-water corals and certain sea pens. While these species are not formally listed as endangered or threatened, their limited distribution makes them vulnerable to human impact.

Because of the difficulty of finding and listing every species in a particular environment, diversity of habitat within a small area is often used by marine scientists as an indicator of biodiversity. Bottom photographs and video have revealed a high diversity of benthic habitat types in the Gully; and geological surveys have confirmed a wide variety of depths and surficial (ocean floor) sediments. This high diversity of habitat within a small area suggests that the Gully

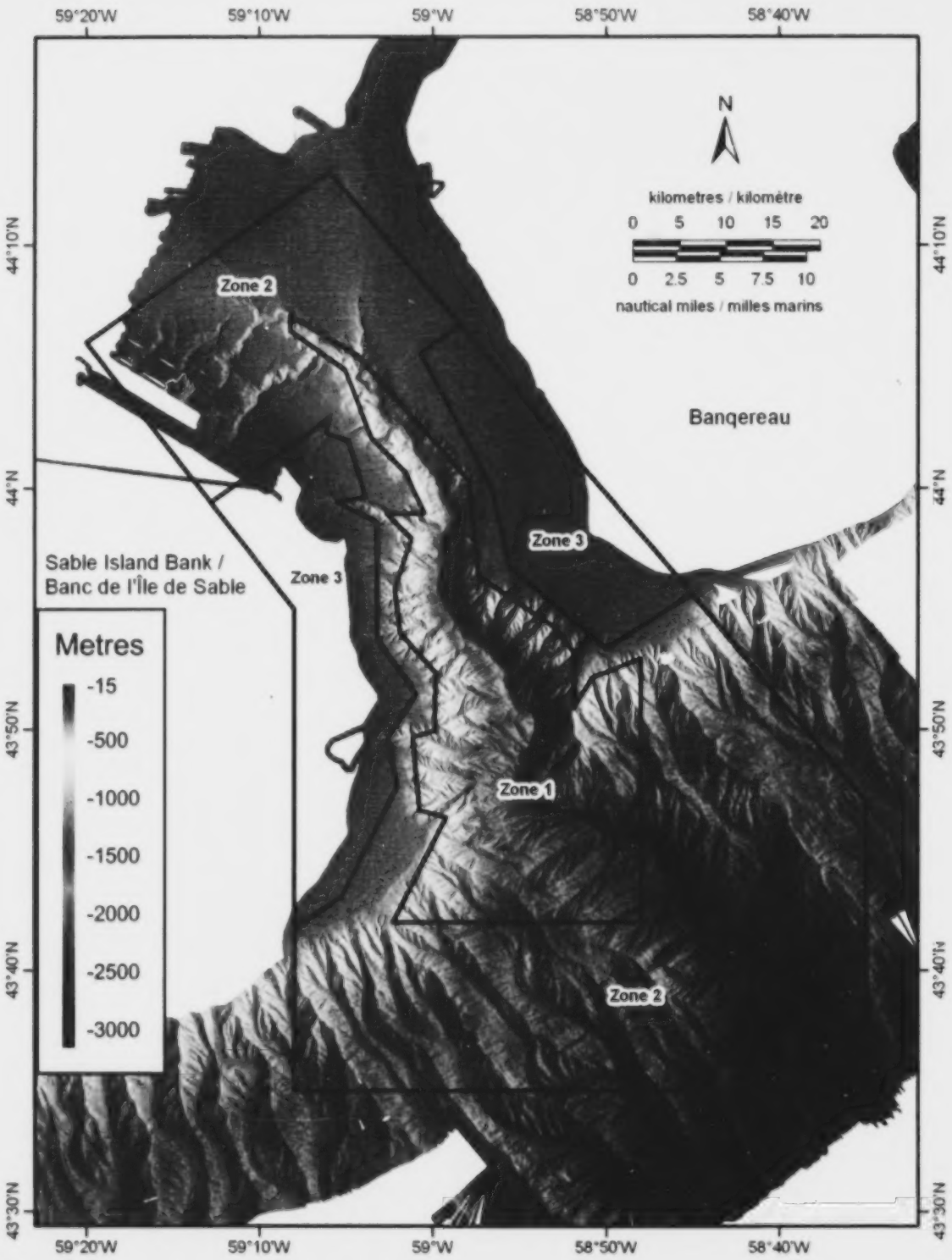


Figure 2. The Gully MPA boundary (thick line) and zones. The bathymetry of the area is shown in colour. Coordinates for the boundary and zones can be found on page 30 (Figure 3).

is an area of high biodiversity. Studies of demersal fish and cold-water corals have confirmed that there is a high diversity of those species in the area as compared with other parts of the Scotian Shelf.

Submarine canyons in general appear to be habitats with special or unique features and populations. The Gully is the largest canyon in the Northwest Atlantic and thus a key habitat for deep-water species. Its great depths, steep slopes, and links with both the middle and inner continental shelf and the slope are a unique feature among canyons in the Northwest Atlantic.

The features of the Gully make it a place of great interest for scientific research. It is the site of the longest-running study of beaked whales in the world, as well as more recent studies on physical and biological oceanography. Its significance for science has added to the importance of designating the Gully as a special area.

OVERVIEW OF THE REGULATIONS

The Gully Marine Protected Area Regulations serve to reinforce, augment, and formalize various interim protection policies and measures that were used in anticipation of the MPA being designated. The Regulations, as published in the *Canada Gazette*, are provided in Appendix 1. They apply within the MPA boundary, and under certain circumstances also apply beyond the boundary, reflecting the connection of the Gully with the broader environment. This section provides a general overview of the Regulations. Detailed information on what the Regulations mean is provided in Chapter 4.

THE MPA BOUNDARY

The Regulations establish the MPA boundary and three internal management zones (Figure 2). The entire MPA is 2364 square kilometres in size.

The area within the outer boundary:

- captures both shallow areas and the deepest portions of the canyon, encompassing a diversity of habitats and organisms;
- includes the preferred habitat of the endangered northern bottlenose whale; and
- encompasses key physical processes within and adjacent to the canyon, such as paths for sediment transport (feeder canyons on eastern Sable Island Bank), retention area (deep water in middle canyon), and areas with high levels of internal waves (part of southwestern Banquereau).

MANAGEMENT ZONES

Zoning is a central strategy for maintaining the ecological integrity of the Gully. The zoning scheme classifies different areas within the MPA according to their ecosystem characteristics and protection requirements. The management zones are based on broad ecological zones within the MPA.

The management zoning scheme presented here reflects the perceived sensitivities of the ecosystem and the objectives and conservation priorities for the Gully. These objectives and priorities are described in detail in Chapters 2 and 3. Management measures for each zone and how they pertain to the different sectors are discussed in Chapter 4.

Zone 1 encompasses the core canyon area and is afforded the highest level of protection. It contains the deep water elements of "The Gully" ecosystem, including the core canyon area.

Zone 2 includes the canyon walls, the head of the canyon, and the deep water area of the abyssal plain. Few activities are permitted in this area.

Zone 3 includes the shallow banks on either side of the canyon. There is potential for activities to occur there, provided they do not contravene the Regulations.

GENERAL PROHIBITIONS

There are general prohibitions for the MPA, with specified exceptions and an approval process for certain activities. The Regulations make it illegal for any person to:

> *disturb, damage or destroy in the Gully Marine Protected Area, or remove from it, any living marine organism or any part of its habitat [sec. 4(a)].*

General prohibitions also apply to the seabed in

order to protect benthic organisms (benthos) and habitats. In addition, the Regulations prohibit activities that contravene the general prohibitions, including the depositing, discharging, or dumping of substances within the MPA and in areas adjacent to or in the vicinity of the MPA.

Exceptions and Approval Process
The Regulations recognize that certain activities, such as specific types of fishing and scientific research, may occur within the MPA without compromising the objectives. As well, certain activities, such as monitoring and emergency response, may be required to support the management and protection of the MPA while other activities may be required for specified over-riding purposes, such as those for national security.

Within the Regulations, activities are managed through:

(1) the submission and approval of activity plans according to specified conditions, and
(2) specific exceptions to the general prohibitions.

Further guidance on the Regulations as they pertain to particular sectors can be found in Chapter 4.

Activity Plan Approvals and Reporting
In order to ensure that activities being undertaken in the MPA are consistent with the conservation objectives, the Regulations require that a plan containing specified information on activities proposed for the MPA be submitted for the approval of the Minister of Fisheries and Oceans. In general, scientific research and monitoring will be approved in all zones of the MPA if the activities meet the ecosystem protection requirements. Additionally, science and monitoring activities will be approved for the purpose of investigating incidents that may have had an environmental impact on the MPA or meet other management needs.

For activities other than monitoring and scientific research, plans may be approved for Zone 3 provided that the activities will not result in effects beyond natural variation in the zone. As well, activities carried out in Zone 3 cannot result in effects in Zones 1 and 2 that contravene the general prohibitions. Cumulative effects are included in the Regulations and must be evaluated prior to plan approval.

In order to further safeguard the MPA ecosystem, all accidents that result in the disturbance, damage, destruction, or removal of Gully organisms and habitats must be reported to the Canadian Coast Guard within two hours of occurrence. Such accidents could include collisions with marine mammals, entanglement of turtles or marine mammals, spills, or accidental discharges.

Exceptions
Exceptions to the general prohibitions and the activity plan approval requirements are granted for several reasons. Exceptions are provided for activities conducted by or for the Government of Canada for the purposes of public safety, law enforcement, national security, the exercise of Canadian sovereignty, and environmental emergency response.

Exceptions are also provided for marine scientific research activities when they are carried out or sponsored by foreign governments and in compliance with a valid consent issued pursuant to the *Coasting Trade Act*. Ships exercising international navigational rights and abiding by all relevant international and Canadian laws are also exempted from the general prohibitions and activity plan approval requirements.

Holders of valid commercial fishing licences for groundfish and directing for halibut and holders of valid commercial fishing licences for swordfish, tuna and shark are exempted from the general prohibitions in Zones 2 and 3, provided they are fishing in compliance with the terms and conditions of their fishing licences. Other fishing activities may be exempted from the general prohibitions in Zones 2 and 3 provided they can meet certain conditions. Chapter 4 contains more details on these exemptions.

ACTIVITIES IN THE VICINITY OF THE MPA

The Gully MPA is connected with the broader Scotian Shelf ecosystem through currents and the movements of animals into and out of the Gully. The Gully general prohibitions apply to activities occurring outside the Gully MPA that result in "disturbance, damage, destruction or removal" within the Gully MPA itself [sec. 4(c)]. This requirement recognizes that activities occurring outside the boundary have the potential to cause harmful impacts within the MPA.

The area surrounding the Gully will be monitored and environmental impact assessments will be expected to directly address the effects of activities near the MPA on the environment within the MPA, including such

items as noise levels and the movements of deposits and discharges. More guidance on this topic as it relates to particular sectors is provided in Chapter 4.

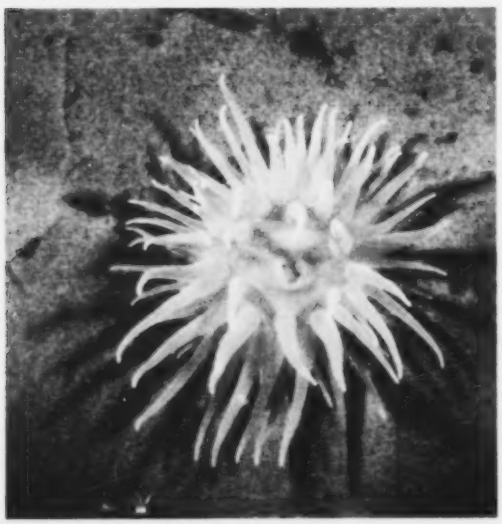
FINES

Violation of the Regulations carries penalties under the *Oceans Act* ranging from $100,000 to $500,000. If other legislation is also violated, convictions can result in fines and imprisonment under that legislation as well.

1.4 THE GULLY ECOSYSTEM

The Gully is the largest submarine canyon in the Northwest Atlantic and one of the deepest: about 40 kilometres long, up to 16 kilometres wide, and more than 3000 metres deep. The canyon extends about 40 kilometres from the Scotian Slope to the middle shelf, through the outer banks of the Scotian Shelf. At the head of the canyon is an area known as the Trough. It is a large and relatively shallow basin that links the canyon with the inner part of the Scotian Shelf. Because of its location, shape, size, and physical oceanography, the Gully contains many diverse habitats and is highly productive for a variety of species.

This section outlines the features and current understanding of the ecology of the Gully, based on research in this and other submarine canyons. A more detailed description can be found in a paper entitled "The Gully Ecosystem" available from Oceans and Coastal Management Division, Maritimes Region.



THE CANYON ENVIRONMENT

The ancestor of the Gully is thought to have been a drainage system that appeared in pre-glacial times when much of the shelf was above sea level. The movements of glacial ice and erosion of meltwater shaped the drainage channel. Over hundreds of thousands of years, the channel developed into a deep canyon, with steep walls in some areas and more gently sloping topography in others. The Gully has a great variety of surficial sediments, with areas of exposed bedrock, boulders, and gravel deposited by glaciers, and finer silts and sands deposited by currents.

The steep topography of the Gully influences the currents flowing through the canyon and the mixing of waters within it. The Gully itself is strongly affected by three currents: the Labrador Current, the Nova Scotia Current, and the Gulf Stream.

Cool waters from the Labrador Sea and the Gulf of St. Lawrence flow southwestwards along the edge of the shelf. This current affects some of the waters lying on the slope of the Scotian Shelf, forming the mass of water known as cool slope water. The Gulf Stream flows south of the slope in a northeastwards direction. Waters from the warmer, saltier Gulf Stream mix with waters on the slope, forming the mass of water known as warm slope water. The relative influence of the warm and cool slope waters varies seasonally and annually.

When it reaches the Gully, part of the flow travelling southwestwards turns into the canyon. Some of this current continues into the Trough and towards the inner shelf, while part of the flow is turned at the head of the canyon and flows outward along Sable Island Bank on the west side of the canyon. Here it is joined by other waters flowing from the middle and inner shelves. In the summer, fall, and winter, the flow into the Gully and out are approximately equal. In the spring, the flow in is twice as strong as the flow out, with the extra flow joining the Nova Scotia Current and continuing along the coast.

The opposing currents, which come in on the Banquereau side and go out on the Sable Island

Bank side, create an area in the centre with weak counter-clockwise circulation. The net result is an area that retains particles and marine life. These retention zones are important biologically as they keep eggs, larvae, and juvenile fish in preferred habitat or near sources of food. However, retention areas can also concentrate wastes and debris from human activities, rendering these areas somewhat more vulnerable to human activities.

The springtime flow of water into the Gully replenishes nutrients and stimulates a spring bloom of phytoplankton. In the summer, waters in the area become stratified with warmer water at the surface. Nutrients are used up quickly in this surface water and phytoplankton growth is low. However, because the Gully is at the shelf edge, there are strong internal waves caused by the steep topography and twice-daily tides, particularly on the Banquereau side of the Gully. These mix the surface waters with the cooler waters below, bringing nutrients up into the sunlit region (euphotic zone) and pulling some of the phytoplankton down. This regular mixing results in high concentrations of phytoplankton at depths of 30 to 40 metres. These microscopic marine plants provide a continuous food source.

Near-bottom currents move nutrients, small animals, marine snow (decomposing marine life and bacteria), and other particles from the adjacent banks into the Gully. The feeder canyons and smaller channels provide a route from the banks to the canyon. These canyons and channels are rich in animal life. They are known to be good areas to fish for groundfish that stay in the channels to feed. Outside the feeder canyons and smaller channels, fine suspended particles move into the canyon from the adjacent banks.

DIVERSE HABITATS AND BIODIVERSITY

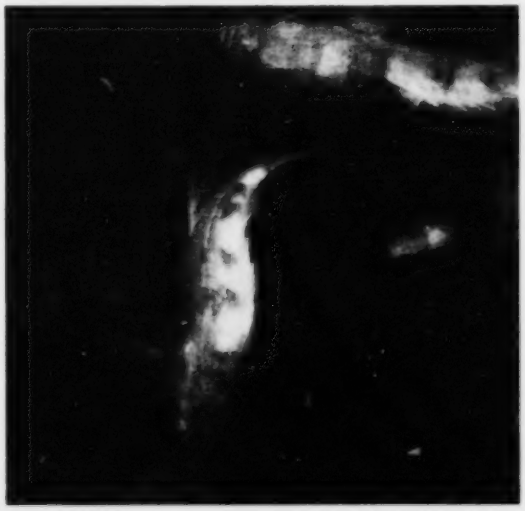
With varied depths and sediment types, the Gully has a diversity of habitats and a diversity of species. Within the MPA are deep-diving, squid-eating whales; seabirds; filter-feeding corals and sea pens; marine worms; molluscs; crabs; and many other species. Some of these species, like the northern bottlenose and sperm whales, travel from surface waters to the deepest parts of the Gully. Others, such as the gold-banded corals and sea pens, spend their adult lives attached to the sea floor.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has assessed the status of the Scotian Shelf population of northern bottlenose whale as endangered. There are fewer than 200 animals in the population, with the Gully being the most important area on the Scotian Shelf for the whale. The whales are also found regularly in two nearby submarine canyons, Haldimand Canyon and Shortland Canyon. These three canyons are the only areas on the Scotian Shelf and Slope that the whales are known to use regularly.

The area is highly frequented by other marine mammals as well. There are confirmed sightings of thirteen different species of whales and dolphins in the Gully and other species may occur there occasionally. Because the Gully is well used by whales and dolphins, it is visited regularly by whale researchers from Dalhousie University. They have studied the northern bottlenose and sperm whales found in the canyon for more than twenty years.

The toothed whales and dolphins of the Gully feed on abundant squid and fishes such as lanternfish, while baleen whales like the blue whale are feeding on shrimp-like animals called krill. In other parts of the world, sperm whales and northern bottlenose whales eat deep-living squid species. While we are fairly sure that these whales are also eating squid in the Gully, more research is needed to understand their full diet.

The diversity of surficial sediments in the MPA results in conditions appropriate for many different



bottom-dwelling animals. Filter feeders, such as corals and anemones, benefit from the steady flow of small animals and marine snow from the head of the canyon, through the feeder canyons, and down the canyon walls. Deposit feeders, such as some marine worms, thrive in parts of the canyon where marine snow is deposited.

The benthic life of the Gully includes a diversity of cold-water corals. While these corals have a patchy distribution in the waters of Atlantic Canada, the Gully has the highest diversity of corals of the areas studied in detail. Many of these animals are large and long-lived and themselves provide habitat for other animals.

Many different species of fish live in the Gully. Halibut are common in ocean bottom environments of the MPA at depths below 200 metres. Redfish, argentine, dogfish, cusk, and several species of hake are among the many other demersal fishes of the Gully. Swordfish can be found in surface and near-surface waters of the Gully in the summer and fall, when waters are warm. Lanternfishes (small fishes with luminescent organs) are important prey for many larger species. They move towards the ocean's surface at night and towards the seafloor during the day.

Many species are found in the Gully that we know little about. One of the objectives of the MPA is to learn more about some of these species, to ensure that the Plan is effective in protecting the full biodiversity of the Gully.

1.5 COMMUNITY AND ECONOMIC VALUES

Although the Gully is an offshore site far from Nova Scotia's coast, its resources have been used for many years. Fishers have regularly made catches in the Gully for more than a century. The Gully is near sites of current and potential petroleum development. Research on the whales of the Gully has been carried out on a regular basis for more than a decade, and other scientific projects are ongoing. The "Socio-Economic Profile of the Gully" described in general terms the socio-economic values of the Gully, and other assessments provided further detail on particular sectors (see later in this chapter for the list of assessments). These sources were used for the brief description of the uses of the Gully that follows.

FISHERIES

Fishing boats from Gloucester, Massachusetts made regular trips to the Gully in the late nineteenth century and considered it one of the best halibut grounds of the time. This hook and line fishery has had a continuous presence in the area, with present-day fishers based in Nova Scotia ports. Over the years, the halibut fishery was joined by fisheries for many other species. There were fisheries for cod, haddock, and pollock in the shallow parts of the Gully and adjacent areas until 1993, when cod and haddock fisheries on the eastern Scotian Shelf were put under a moratorium. Although fisheries for other groundfish, such as redfish, pollock, and yellowtail flounder, are permitted on the eastern Scotian Shelf, there has been very little effort to catch those species in the Gully since the cod and haddock moratorium.

Whalers took 87 bottlenose whales off Nova Scotia and Newfoundland between 1962 and 1967. Most of these whales were taken in the area of the Gully and the edge of the Grand Banks. This activity likely had a dramatic impact on that whale population, which is estimated to have less than 200 animals. Canada banned commercial whaling in 1972.

There are currently two commercially significant fisheries occurring in the Gully, a bottom longline fishery for halibut and a surface longline fishery for swordfish. The Gully is a key fishing area for some fishers who return there year after year. In the Gully MPA, halibut fishing activities are concentrated on the western side of the Gully, in the feeder canyons, in the trough, and on the southwest peak of Banquereau, while the swordfish fishery mainly takes place at the mouth of the Gully at the shelf edge.

PETROLEUM

The Scotian Shelf and Slope are becoming increasingly important areas for petroleum exploration and development. Within the MPA, the Primrose field on the west canyon wall represents the only existing petroleum licence. It was first discovered in 1973 and is classified as a significant discovery by the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB).

This discovery is estimated to have 131 billion cubic feet of natural gas and 2 million barrels of oil. Based on a recent assessment by Natural Resources Canada (NRCan), other areas within the MPA have a strong probability of having natural gas and crude oil. Within the MPA, portions of Sable Island Bank have the highest prospectivity for commercial oil and gas reserves, while the deeper portions of the canyon proper has the lowest prospectivity. The Venture field of the Sable Offshore Energy Project is the closest production site to the Gully, with operations approximately 20 kilometres from the MPA boundary. Ongoing exploration in adjacent shelf and slope areas may result in further developments in areas near the Gully.

NON-FUEL MINERALS

The NRCan mineral assessment concluded that the greatest mineral potential within the Gully MPA lay with sand and gravel deposits, particularly the sand deposits on the shallow Sable Island Bank portion of the MPA. These deposits are well-sorted, in large quantities, and suitable for industrial uses. They are not unique to the Gully area as similar deposits exist elsewhere on the Scotian Shelf. There is potential for there to be other minerals in the area. The deep-water environment of the Gully presents a challenge for mineral extraction. In the present economic climate and with existing technology, there is little interest in deep-water mineral resources.

COMMERCIAL SHIPPING

The Gully does not appear to be highly used by commercial ships. A preliminary assessment of marine traffic in the MPA and surrounding region found that relatively little commercial traffic passed through the MPA. Although the Gully is near several major shipping routes, larger commercial vessels are found more frequently to the north or south of the canyon area. Most of the vessel traffic within the MPA itself consists of fishing vessels. A portion of the MPA was declared a Whale Sanctuary in 1994 and a Notice to Mariners asked ships to avoid the area on a voluntary basis.

MILITARY

Canadian naval vessels conduct exercises in the general area. There are no particular characteristics of the MPA that give it any greater value for these exercises.

RESEARCH

Scientists have learned much about the Gully in recent years. The research on bottlenose whales conducted by Dalhousie University scientists is the longest on-going study in the Gully. However, other researchers have also carried out research in the canyon. Prompted by conservation interest and the candidate MPA designation, DFO and NRCan have reviewed existing sources of information and carried out new research programs in the Gully. Vessels from the Sea Education Association at Woods Hole, Massachusetts regularly make summer visits to conduct student research projects. Other studies have been initiated as part of the Gully MPA research and monitoring program.

TOURISM

Cruise ships are rumoured to have visited the Gully to view whales and dolphins. Tourism operators based in Nova Scotia have expressed interest in doing tours to view the whales; however, no such tours are believed to be operating at the moment.

CONSERVATION

The conservation of marine resources and environments is of increasing importance to many Canadians. The Gully and the marine life found there, particularly the whales, are valuable to many people for non-consumptive reasons. Environmental organizations and the general public have identified the Gully as a unique area that merits special protection.

1.6 CONSERVATION HISTORY AND CURRENT EFFORTS

This section provides an overview of conservation initiatives with a focus on the MPA establishment process and measures put in place prior to the establishment of the MPA. A timeline of events in the conservation history of the Gully can be found in Box 2. A full description of the Conservation History

BOX 2. MILESTONES IN THE CONSERVATION OF THE GULLY

1970s and 1980s	Increasing conservation interest and dedicated research on northern bottlenose whales.
1990-present	Protective measures from the oil and gas industry.
1992	Parks Canada selects the Gully as a Natural Area of Canadian Significance.
1994	DFO establishes Whale Sanctuary Canadian Wildlife Service (CWS) convenes a workshop on the features of the Gully.
1995	CWS releases a discussion paper on a conservation strategy for the Gully.
1996	Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the Gully population of northern bottlenose whales as vulnerable.
1997	The Joint Public Review panel releases its report on the Sable Offshore Energy Project. The report has particular recommendations for the Gully. The World Wildlife Fund (Canada) highlights the Gully in their Endangered Spaces Campaign.
1997-1998	DFO conducts a Science Review of the Gully.
1998	DFO releases the Sable Gully Conservation Strategy and announces an MPA Area of Interest.
1998-2002	Interim protection of the Gully and DFO evaluation of the Gully as an MPA.
1999-2001	DFO Gully Science Review.
2002-2003	Consultations on regulatory intent for Gully MPA.
2002	COSEWIC assesses the Scotian Shelf population of northern bottlenose whales as endangered.
2003	Establishment of Gully Advisory Committee.
2004	Gully Regulations undergo public review and Gully is designated an MPA.
2004-07	Implementation of MPA Regulations and development of Gully MPA Management Plan.

is provided in the 1998 Sable Gully Conservation Strategy and in an article by Fenton and others. (See References)

CONSERVATION INITIATIVES BEFORE MPA DESIGNATION

In the 1970s, a DFO whale biologist noted that northern bottlenose whales were frequently found in the deep waters near Sable Island and the same whales had been targeted by whalers in the 1960s. The population of northern bottlenose whales was thought to have declined throughout the North Atlantic. Starting in the late 1980s, the Gully's northern bottlenose whales became the focus of research conducted by scientists from Dalhousie University. The importance of the area for whales led to increasing conservation interest in the canyon.

This interest was reinforced by a Parks Canada initiative that used a ranking system to identify candidate sites for national marine parks on the Scotian Shelf. The ecological and historical features of the Gully and Sable Island resulted in a high ranking for the area. Parks Canada selected a large area encompassing the Gully and Sable Island as one of three Natural Areas of Canadian Significance (NACS) on the Scotian Shelf.

In 1993, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) reviewed the status of the northern bottlenose whale and called attention to the possibility of the Gully population being separate from other North Atlantic populations. DFO designated the Gully as a Whale Sanctuary in 1994 to minimize noise disturbance and the potential of collisions of whales with ships. The Canadian Coast Guard issued a Notice to Mariners that asked marine traffic to avoid the area.

In November 1994, the Canadian Wildlife Service convened a workshop on the Gully. The resulting discussion paper, "Towards a Conservation Strategy for the Gully, near Sable Island, Nova Scotia", was released the following year. In 1996, COSEWIC assessed the Gully population of the northern bottlenose whale as vulnerable due to its decrease caused by whaling 25 years earlier and its proximity to industrial development.

As early as 1990, the petroleum industry initiated

BOX 3. STEPS FOR THE ESTABLISHMENT OF MPAS (FROM NATIONAL FRAMEWORK)

1) Identification of AOI
2) Initial screening
3) AOI evaluation and recommendation
4) Development of a management plan for a candidate MPA site
5) Designation of MPA
6) Management of MPA

voluntary measures to limit their activities in the Gully. The Joint Review Panel report on the Sable Offshore Energy Project (SOEP) made several recommendations related to protecting the ecological integrity of the canyon. In its Code of Practice, SOEP defined the Gully as an aircraft and vessel exclusion area. Other petroleum companies adopted similar codes.

In 1997, DFO initiated a Sable Gully Conservation Strategy to address conservation interest in the canyon. A science review was carried out in 1997 and 1998 to describe scientific understanding of the canyon to date. In 1998, DFO released the Gully Conservation Strategy and announced the Gully as an Area of Interest (AOI) – in other words, a candidate MPA – under DFO's Marine Protected Area Program.

When the Gully was announced as a candidate MPA, DFO requested that no new activities take place within the canyon. Several conservation measures were adopted to protect the features of the canyon. For example, DFO monitored fisheries in the area. While existing fisheries were allowed to continue, DFO placed restrictions on the development of new fisheries.

The CNSOPB developed a policy on the Gully in early 1999. It stated that no calls for bids would be issued in the AOI and no other activities would be authorized within the area for the remainder of 1999. The policy remained in place during subsequent years. As well, through the environmental assessment process and consultation with regulators and the petroleum industry, mitigation measures have been adopted to reduce impacts of nearby petroleum activities on the Gully and the whales found there.

MPA ESTABLISHMENT PROCESS

DFO's *National Framework for Establishing and Managing Marine Protected Areas* sets out several steps for the establishment for MPAs (Box 3). Before legal designation of the Gully MPA occurred, assessments, consultations and reviews of the regulatory proposal were carried out. This staged process attempted to understand different viewpoints, share knowledge, and build consensus. A considerable amount of screening and evaluation was completed, such as the initial science review (1997-98) that compiled existing information about the Gully. Following from those efforts, several assessments were conducted in support of the MPA process. These assessments established who would be affected in the establishment of an MPA, and who else was interested in the MPA process, as well as providing information to assist in managing the area. They also aided in determining the MPA boundaries and zoning scheme.

Several reports were completed as part of this assessment process:

- A "Socio-economic Profile of the Gully" was completed in the summer of 1999. It described the human activities for an area surrounding and including the Gully.
- An assessment of noise issues related to northern bottlenose and sperm whales in the Gully AOI was carried out in 2000.
- Current understanding of the ecology of the Gully was summarized in "The Gully Ecosystem."
- A minerals assessment was conducted by NRCan.
- A hydrocarbon assessment of the Gully was conducted by NRCan, with assistance from the CNSOPB.
- A detailed overview of the fisheries in the Gully and surrounding area was completed in 2002. Further analyses of catches within the MPA itself were conducted by the Oceans and Coastal Management Division and presented to stakeholders.

In 2002-2003, the proposed intent of the Regulations was presented to the Gully Advisory

Committee and at other meetings of stakeholders. Based on this feedback, the proposed Regulations were completed and published in the *Canada Gazette* (Part I) for public review in December 2003. The final Regulations were published in the *Canada Gazette* (Part II) in May 2004 and came into force at that time.

REFERENCES AND RELATED MATERIALS

Beson, K. 1998. Towards a Conservation Strategy for Sable Island. Prepared for Environment Canada, Canadian Wildlife Service, Atlantic Region. Available online: *http://www.ns.ec.gc.ca/reports/sable.html.*

Breeze, H. 2002. Commercial fisheries of the Sable Gully and surrounding region: Historical and present activities. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2612.

DFO. 1999. National framework for establishing and managing marine protected areas. Available online: *http://www.dfo-mpo.gc.ca/oceans-habitat/oceans/ri-rs/mpaframework-cadrezpm/index_e.asp.*

Fader, G.B.J. 2003. The mineral potential of the Gully Marine Protected Area, a submarine canyon of the outer Scotian Shelf. Geological Survey of Canada Open File 1634. Dartmouth, NS: Geological Survey of Canada.

Fenton, D.G., P.A. Macnab and R.J. Rutherford. 2002. The Sable Gully marine protected area initiative: History and current efforts. In: S.Bondrup-Nielsen et al., eds. Managing Protected Areas in a Changing World. Proceedings of the 4th International conference on the Science and Management of Protected Areas, University of Waterloo, May 2000. Wolfville, NS: SAMPAA.

Gordon, D.C. and D.G. Fenton, eds. 2002. Advances in Understanding the Gully Ecosystem: A Summary of research projects conducted at the Bedford Institute of Oceanography (1999-2001). Canadian Technical Report of Fisheries and Aquatic Sciences 2377.

GTA Consultants. 1999. Socio-economic profile of the Sable Gully. Prepared for the Oceans Act Coordination Office, Department of Fisheries and Oceans.

Harrison, W.G. and Fenton, D.G., eds. 1998. The Gully: A Scientific Review of its Environment and Ecosystem. Canadian Stock Assessment Secretariat Research Document 98/83.

Lane, P. and Associates. 1992. A study to identify marine natural areas of Canadian significance in the Scotian Shelf marine region. Report prepared for Parks Canada, and the Department of Indian and Northern Affairs.

Lawson, J.W., R.A. Davis, W.J. Richardson and C.I. Malme. 2000. Assessment of noise issues relevant to key cetacean species (northern bottlenose and sperm whales) in the Sable Gully Area of Interest. Prepared for Oceans Act Coordination Office, Maritimes Region, Department of Fisheries and Oceans.

MacIsaac, K., C. Bourbonnais, E. Kenchington, D. Gordon Jr. and S. Gass. 2001. Observations on the occurrence and habitat preference of corals in Atlantic Canada. In: J.H.M. Willison, J. Hall, S.E. Gass, E.L.R. Kenchington, M. Butler, and P. Doherty. Proceedings of the First International Symposium on Deep Sea Corals. Marine Issues Committee, Special Publication #10. Halifax, NS: Ecology Action Centre. pp. 58-75.

Oceans Act Coordination Office. 1998. The Sable Gully Conservation Strategy. Oceans Act Coordination Office, Maritimes Region, Department of Fisheries and Oceans, December 1998.

Rutherford, R.J. and H. Breeze. The Gully Ecosystem. 2002. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2615.

Shackell, N.L. and K.T. Frank. 2003. Marine fish diversity on the Scotian Shelf, Canada. Aquatic Conservation: Marine and Freshwater Ecosystems 13: pp. 305-321.

Whitehead, H., and T. Wimmer. 2005. Heterogeneity and the mark-recapture assessment of the Scotian Shelf population of northern bottlenose whales (Hyperoodon ampullatus). Canadian Journal of Fisheries and Aquatic Sciences 62: pp. 2573-2585.

Wimmer, T. and H. Whitehead. 2004. Movements and distribution of northern bottlenose whales, Hyperoodon ampullatus, on the Scotian Slope and in adjacent waters. Canadian Journal of Zoology 82: pp. 1782-1794.

2

VISION, GUIDING PRINCIPLES, AND OBJECTIVES

2.1 A VISION FOR THE GULLY MPA

To protect the marine ecosystem of the Gully MPA for future generations by providing effective programs for management, conservation, research, monitoring, and stewardship.

2.2 OBJECTIVES FOR THE GULLY MPA

Objectives for the Gully MPA have been organized according to three main themes: conservation objectives, management and stewardship objectives, and research and monitoring objectives.

CONSERVATION OBJECTIVES FOR THE GULLY MPA

The conservation objectives for the Gully MPA are aimed at protecting the ecological integrity of the Gully, which includes the natural biodiversity, productivity, and ecosystem components, functions and properties. There is one overall objective which has been divided into closely linked sub-objectives.

- Protect the health and integrity of the Gully ecosystem:
  - Protect the natural biodiversity of the Gully.
  - Protect the physical structure of the Gully and its physical and chemical properties.
  - Maintain the productivity of the Gully ecosystem.

MANAGEMENT AND STEWARDSHIP OBJECTIVES

Management and stewardship objectives are aimed at establishing good management of the Gully by promoting and facilitating collaboration among agencies, users, and others with an interest in the Gully and through promoting compliance with the MPA Regulations and management plan. Promoting a greater understanding of the Gully among users and the general public is an important part of managing the MPA.

- Establish effective management of the Gully MPA:
  - Promote collaboration among all users, regulators, and other interests.
  - Involve stakeholders and the general public in the management of the MPA.
  - Establish co-operative agreements with responsible regulatory authorities to meet objectives for the MPA.
  - Ensure that human activities within the MPA are consistent with Regulations and the conservation objectives.
  - Monitor and evaluate the design, management, and effectiveness of the MPA on a regular basis to ensure that it is meeting defined objectives.
- Promote stewardship activities:
  - Increase understanding of the Gully ecosystem among regulators, user groups and the public.
  - Promote active participation and engagement in management and research.

RESEARCH AND MONITORING OBJECTIVES

The research objectives aim to develop a better understanding of the Gully ecosystem through research and monitoring of natural processes and the effects of human activities:

- Increase our understanding of the Gully and the potential for human impacts on this ecosystem.
- Foster collaboration and communication among managers and natural and social scientists.
- Provide managers with accurate and timely information on the state of the Gully ecosystem and potential threats to conservation and management objectives.

More details on how these objectives will be met can be found in Chapter 4 and will also be further detailed in a separate research and monitoring strategy.

2.3 GUIDING PRINCIPLES AND MANAGEMENT APPROACHES

The Gully MPA Management Plan and management actions will be guided by the following principles and management approaches, adapted from DFO's national *Policy and Operational Framework for Integrated Management of Estuarine, Coastal and Marine Environments in Canada* and the Eastern Scotian Shelf Integrated Management (ESSIM) Plan.

Ecosystem-based Management: The management of human activities so that ecosystem components, functions, and properties are restored and/or maintained at appropriate temporal and spatial scales. Ecosystem objectives are used to identify and set desired ecosystem conditions, measurable indicators for monitoring and evaluation, and operational measures and actions to ensure that conditions are met and maintained.

Collaboration and Stewardship: While DFO has the lead jurisdictional responsibility, the vision and objectives for the Gully can only be achieved through the co-ordination, co-operation, and partnership among all organizations and interests. Management planning must be both inclusive and transparent, and supported, to the greatest extent possible, by all affected organizations and individuals. Stewardship refers to the wide range of actions and activities that can be taken by individuals, groups, and communities to raise awareness of the

Gully and to monitor, and conserve the Gully ecosystem. DFO encourages and will actively pursue collaborative activities and stewardship opportunities for the Gully.

Precautionary Approach: The precautionary approach is an evaluation and decision-making process that errs on the side of caution and is used in the case of significant scientific uncertainty. Not all human activities will be excluded from the Gully, but a precautionary approach will be applied in evaluating proposed activities. This will put the burden of proof on any individual, organization, or government agency conducting activities within or affecting the Gully to demonstrate that proposed activities will not damage the marine ecosystem.

Sustainability: Human activities in the Gully will be limited to those whose sustainability has been demonstrated. Emphasis will be placed on maintaining healthy populations of all species and on the conservation of ecosystem functions and processes. A precautionary approach and the most current scientific knowledge will provide the basis for management decisions.

Integrated Management: the Gully MPA is located within the Eastern Scotian Shelf Large Ocean Management Area. This is the area for the Eastern Scotian Shelf Integrated Management (ESSIM). ESSIM will take a comprehensive and coordinated approach to planning and decision making for sustainability, based on the balanced consideration of the full range of interests and environmental, social, cultural, economic and institutional objectives for the whole management area.

Knowledge-based Decision-making: Management actions will be based on the best scientific information and traditional ecological knowledge available. Scientific studies of particular aspects of the ecosystem will be encouraged to improve information.

Adaptive Planning and Management: As the Gully MPA is one of the first MPAs under the *Oceans Act*, management plans will take a "learning by doing" approach. As well, some of the pressures on the Gully ecosystem will change over time. Planning and ongoing management actions will be adaptive and responsive to better knowledge of the Gully ecosystem and changing social, environmental and economic conditions. The design, management and effectiveness of the Gully MPA will be monitored and evaluated regularly to see if it is meeting the objectives for the MPA.

2.4 LINKS WITH REGIONAL AND NATIONAL PROGRAMS

THE EASTERN SCOTIAN SHELF INTEGRATED MANAGEMENT (ESSIM) INITIATIVE

The Gully Marine Protected Area Management Plan is linked closely with the development of an integrated ocean management plan (the ESSIM Plan) for the eastern Scotian Shelf. The ESSIM Plan is a multi-year, strategic-level plan that provides long-term direction for and commitment to integrated, ecosystem-based and adaptive management for the area. It promotes an objectives-based approach to ocean management through a set of long-term, overarching goals and objectives for collaborative governance and integrated management, sustainable human use, and healthy ecosystems. The ESSIM Plan also provides a set of management strategies that identify and organize the various actions that will be used to meet the goals and objectives. Furthermore, the ESSIM management framework provides an integrated reporting system to monitor performance and progress against the Plan.

The Gully MPA contributes to the objectives for healthy ecosystems contained in the ESSIM Plan, including those related to the diversity of benthic, demersal and pelagic community types, at-risk species, incidental mortality of species, marine environmental quality, and habitat integrity. The MPA Management Plan also provides a significant contribution to the broader regional marine conservation framework being developed and supported through the collaborative ESSIM planning process. For example, the Gully MPA supports regional efforts for coral conservation and is linked with the Coral Conservation Plan developed as part of the ESSIM planning process. The MPA is an important coral habitat, boasting the highest diversity of corals known to occur in the region. Thus, the MPA responds directly to the objectives of the Coral Conservation Plan to conserve the health and integrity of coral communities, and to protect and, where necessary, restore important coral habitats.

THE FEDERAL MPA STRATEGY AND DFO'S MPA PROGRAM

Canada has made national and international commitments to conserve its biodiversity. It was the sixth country to ratify the Convention on Biological Diversity, an international agreement that requires countries to develop and implement strategies for the conservation and sustainable use of biodiversity. At the World Summit on Sustainable Development in 2002, Canada committed to the establishment of a representative network of MPAs by 2012.

The passage of the *Oceans Act* in 1997 enabled the federal government to address Canada's social, economic, and environmental objectives for its oceans in a more coordinated manner. The *Act* contained provisions for the creation of marine protected areas and the development of integrated management plans. In 1999, DFO released a Marine Protected Areas Policy which outlined Canada's commitment to developing a network of marine protected areas. The 2005 *Federal Marine Protected Areas Strategy* was developed to implement a federal network of marine protected areas that are managed within an integrated oceans management framework. The strategy calls for collaboration in managing and monitoring these areas, and for increasing the awareness, understanding, and participation of Canadians in marine protected areas.

DFO has the lead responsibility for establishing marine protected areas. The Gully contributes to the national network of marine protected areas and to Canada's commitments to conserve biodiversity. The objectives for the Gully MPA reflect the goals of DFO's MPA program, as stated in the 1999 MPA Policy:

- To proactively conserve and protect the ecological integrity of each MPA site.
- To contribute to the social and economic sustainability of coastal communities by providing for uses which are compatible with the reasons for designation.
- To further knowledge and understanding of marine ecosystems.

SPECIES AT RISK ACT

The *Species at Risk Act* (SARA) was passed to prevent the extinction of wildlife species in Canada and to protect species at risk from becoming extinct or extirpated. Species are added to the List of Wildlife at Risk following assessment and consultation with Canadians. Species identified as endangered or threatened that are added to this list are protected by prohibitions found in SARA. These include prohibitions against harming, harassing, capturing, taking, or killing an individual of an endangered or threatened species, and against destroying its residence or critical habitat.

Marine Protected Areas provide an important management tool to protect marine species at risk. Certain species at risk, such as leatherback turtles, transit the Gully or use it on regular migrations, while other species at risk are found regularly in the Gully, such as the northern bottlenose whale. This MPA management plan and management activities will be linked with future SARA recovery strategies and action plans developed for at-risk species found in the area. Research and monitoring activities carried out as part of SARA action plans will also be beneficial for increasing the understanding of the Gully ecosystem. Conversely, research and surveillance activities carried out to manage the MPA may also be beneficial for assessing compliance with SARA and promoting the recovery of particular at-risk species.

REFERENCES AND RELATED MATERIALS

DFO. 1999. Marine Protected Areas Policy, March 1999. Available on website *http://www.dfo-mpo.gc.ca/oceans-habitat/oceans/ri-rs/mpapolicy-politiquezpm/pdf/policy_e.pdf*

DFO. 2005. Canada's Federal Marine Protected Areas Strategy. Available on website *http://www.dfo-mpo.gc.ca/oceans-habitat/oceans/mpa-zpm/fedmpa-zpmfed/pdf/mpa_e.pdf*

DFO. 2005. Eastern Scotian Shelf Integrated Ocean Management Plan (2006-2011) Draft for Discussion. Oceans and Coastal Management Report 2005-02.

DFO. 2002. Policy and Operational Framework for Integrated Management of Estuarine, Coastal, and Marine Environments in Canada. Available on website *http://www.dfo-mpo.gc.ca/oceans-habitat/oceans/ri-rs/cosframework-cadreoc/index_e.asp*

Government of Canada. 2003. Species at Risk Act – A Guide. Available on website *http://www.sararegistry.gc.ca/the_act/HTML/Guide_e.cfm*

3

PRIORITY CONSERVATION ISSUES

The environmental characteristics of the Gully and the human activities occurring in and around have made certain issues a priority for management. It is important for the management plan to address these issues in order to meet the stated objectives for the MPA. The issues were identified in discussions with stakeholders and through the science review process. They have been described in the 1998 Gully Conservation Strategy or in the assessment documents and continue to be examined in ongoing discussions.

The priority conservation issues for this management plan (2008-2012) are as follows:

- Protecting cetaceans from impacts caused by human activities.
- Protecting seafloor habitat and associated benthic communities from alteration caused by human activities.
- Maintaining or restoring the quality of the water and sediments of the Gully.
- Conserving other commercial and non-commercial living resources.

Although these issues have been identified as priorities, other activities to meet the objectives of the Gully will also be undertaken under this management plan. As well, new conservation priorities can be appended to the Plan, if deemed necessary by the Gully Advisory Committee.

This chapter provides an introduction to the priority issues and explains in general terms why they are a prime concern. Management actions to address these issues are listed here. They are described in greater detail in Chapter 4 as they pertain to each sector. A complete list of the actions identified in the Plan can be found in Appendix 2.

3.1 PROTECTING CETACEANS FROM IMPACTS CAUSED BY HUMAN ACTIVITIES

Importance of the Gully for Whales

Whales and dolphins (cetaceans) have been the focus of extensive research in the Gully area. The Gully-Sable Island area has been identified as one of the most important habitats for all marine mammals on the Scotian Shelf. The area has a high diversity of whales and dolphins. It is an important habitat for the endangered Scotian Shelf population of the northern bottlenose whale. This species has been given particular attention in the management plan, given the high use of the deep canyon area by much of the population and the presence of the whale on a year-round basis.

Issue:	Protecting cetaceans from impacts caused by human activities.
Strategy:	Minimize and manage harmful impacts and stresses from human activities on cetacean populations and their habitats
Actions:	Eliminate activities that are known or likely to harm, disturb, or kill whales or damage or destroy their habitats within the Gully MPA.
	Carry out research on human activities where impacts on whales are uncertain, such as the impacts of different types of noise.
	Set strict guidelines for activities that could potentially impact whales or their habitats.
	Monitor the health of the Gully whale populations.

Because of the importance of the Gully for cetaceans, initiatives to protect them are a focal point of the Gully Management Plan. Addressing whale conservation means addressing short-term or acute impacts as well as cumulative or chronic impacts. Many whales have a broad range and the Gully MPA initiative should be coordinated with other efforts to ensure the health of cetaceans on the rest of the Scotian Shelf and in the Northwest Atlantic. Appendix 3 provides more details on particular threats to whale health.

Each whale species that uses the Gully has particular habitat preferences, with distributions determined by prey abundance, temperature, and underwater topography. Considering the habitat needs and known distributions of these species in the Gully, waters deeper than 200 metres have been identified as a general area of importance to most cetaceans. The northern bottlenose whale is mainly found in areas of the Gully where waters are deeper than 800 metres.

WHALES AND HUMAN ACTIVITIES

Human activities affect cetaceans in many different ways. In particular, the following general characteristics of cetaceans tend to increase their vulnerability to human activity:

- most are long-lived species and reach sexual maturity at a late age;
- the rate of reproduction is slow in many species (one calf and several years between births);
- most species are highly mobile and migratory during their full life cycle;
- many are highly social and have some form of social organization, and
- populations of many species have been reduced by whaling.

Certain human activities may kill or injure whales, or cause them to change their behaviour with potential effects on the overall health of the animals. For example, whales may be injured or killed by being struck by ships or entangled in fishing gear. Whales may also be kept from their normal activities by vessels or other human activity in important habitats. Prolonged or repeated disturbances may change whale behaviour (such as mating or feeding), force them out of critical habitat, or have other harmful effects. While there have been no known ship strikes of whales within the Gully, there has been very little monitoring of the Gully whales. Only one northern bottlenose whale entangled in fishing gear has been observed in the Gully. However, scars and other marks observed on northern bottlenose whales suggest that the whales are becoming tangled with fishing gear more often than has been observed.

Impacts of some human activities on whales are not well understood. Many whale species use sound to navigate and locate prey, since sight is of little use in the dark depths beyond the euphotic zone. Human-generated sounds may impact whales directly by causing hearing loss or other physiological effects, or indirectly by creating background noise that prevents them from finding prey, disturbs mating behaviour, causes them to avoid the area, or harms or displaces their prey.

Sound can travel vast distances in the ocean and is refracted by the ocean bottom. Complex topographical features, such as submarine canyons, may make it difficult to predict levels of noise and impacts. The impacts of sound on whales are related to the intensity of the sound, its frequency, and its duration. Different species of whales have different hearing abilities and create sounds at different intensities and frequencies. Although the different species of toothed whales have similarities in how they use and hear sound, there are differences among species and many species have been studied very little. As well, cumulative impacts are not known.

Cumulative impacts from sound are not the only cumulative impact concern. Whales found in some parts of the world have been known to bioaccumulate high levels of contaminants. For example, the beluga whales in the St. Lawrence River have higher levels of certain persistent organic contaminants than their surrounding environments. Levels of contaminants and potential sources are not known for the whales found in the Gully.

The MPA Regulations (Appendix 1) have been designed to reduce the interaction between whales and human activity. In addition, research activities will be carried out to address some of the information gaps related to whales. What this will mean for each sector is described in Chapter 4.

MARINE MAMMAL REGULATIONS

As well as the Regulations designed specifically for the Gully MPA, all marine mammals are protected under section 7 of the Marine Mammal Regulations under the *Fisheries Act*. These Regulations do not allow disturbance of marine mammals, except when fishing under the authority of these Regulations (such as for some seal populations). Amendments to the current Marine Mammal Regulations are under consideration. The proposed amendments will provide a more detailed definition of disturbance and be more explicit in regulating some activities, such as whale watching.

SARA REGULATIONS

As well as the regulations designed specifically for the Gully MPA, several marine mammals are protected under the *Species at Risk Act*. Marine mammals such as the northern bottlenose whale are added to this list and protected by prohibitions found in SARA. These include prohibitions against harming, harassing, capturing, taking, or killing an individual of an endangered or threatened species. This also includes prohibitions against destroying its critical habitat.

3.2 PROTECTING SEAFLOOR HABITAT AND ASSOCIATED BENTHIC COMMUNITIES FROM ALTERATION

Benthic animals are an important component of the Gully ecosystem. The variety life-spporting surfaces, or substrates, and ocean current systems, or regimes, contribute to the diversity of habitats within

the canyon. The high diversity of benthic habitats contributes to the biodiversity of benthic life. The benthic environment of the Gully has special characteristics, species, and areas that have special importance and protection needs. The management plan aims to protect the diversity of benthic habitats and to protect sensitive areas from disturbance.

Shallower (<500 metres deep) portions of the Gully have been sampled in recent years and scientists have described the communities found at these depths. There are fewer samples from the deep waters of the Gully. Based on this work, a detailed assessment of the distribution, abundance, and diversity of corals in the Gully was prepared and a photographic atlas is in preparation.

Interest in the Gully's benthic communities has had a particular focus on cold-water gorgonian corals. Some of the gorgonian corals found on the Scotian Shelf are large, long-lived, and provide habitat for other species. The Gully has a high diversity of corals; however, the extent of the areas with corals is not well-known as deeper parts of the canyon have not been sampled. At depths below 200 metres, the feeder canyons and bedrock outcrops in the main canyon have aggregations of corals. Fishers have consistently identified an area of the Gully known as "Hell's Kitchen" as having a high abundance of corals.

Issue: Protecting seafloor habitat and associated benthic communities from alteration caused by human activities.

Strategy: Minimize disturbance of all benthic communities in the Gully MPA and provide high levels of protection for sensitive and important areas.

Actions: Eliminate activities that are known or likely to harm benthic habitat within the Gully MPA.

Carry out research to map benthic communities within the Gully and to identify the most sensitive and important areas.

Set guidelines for human activities that could potentially impact benthic habitat and benthic animals.

Monitor the health of the Gully's benthic communities to ensure they are being protected from human-caused impacts.

There is general concern over the impact of human activities on benthic communities. Physical disturbance (e.g., removal or alterations) of benthic habitat can seriously affect the viability of communities, particularly those with specialized environmental preferences. Disturbance of the bottom environment in all areas of the Gully will be minimized. Particularly sensitive or important benthic environments require greater management attention and protection.

Physical removal of components of the benthos or their habitat is a direct source of mortality and may alter the habitat so that recovery is very slow or there is no possible return to the previous community structure. Dredging and marine aggregate extraction are obvious examples of activities that alter the benthic environment. Fishing, petroleum exploration and development activities, and scientific research can also damage benthic life.

Globally, scientific results to date suggest that stable and complex benthic habitats and communities that are rarely subjected to natural disturbances are most sensitive to impacts of fishing gear. In particular, environments where the habitat and structure are provided by the benthic animals themselves may be significantly changed after a single disturbance and have very slow recovery rates. This is particularly true of habitats with large, long-lived, attached fauna. Repeated physical disturbance can lead to significant changes in bottom habitat structure and the composition of benthic communities.

Benthic organisms are vulnerable to contaminants in their environment in different ways according to their physiology and natural history. There has been

a great deal of research on contaminant accumulation in certain filter-feeding molluscs (e.g., blue mussels), but very little or no research for most other species. Deposit feeders may ingest contaminants that have accumulated in sediments; filter feeders are more vulnerable to contaminants in the water column. Attached organisms may be smothered by discharges or dumping, such as discharges of drill cuttings from oil rigs. Increases in levels of suspended sediment may irritate or damage the tissues of some benthic animals.

There is a need to characterize the habitats of the Gully, particularly those found at depths below 500 metres. This characterization will serve to identify areas that are most sensitive to human activities, such as areas with complex benthic communities and long-lived animals. For that reason, research activities will be important in addressing this conservation issue.

Issue: Maintaining or restoring the quality of the water and sediments of the Gully

Strategy: Maintain and restore (where necessary) the quality of water and sediments of the Gully within the range of natural variability.

Actions: Set guidelines for the Gully for temperature, salinity, and other environmental variables that fall within the range of natural variability.

Set guidelines for the Gully for levels of contaminants that fall within the range of natural variability.

Monitor human activities in the MPA and in nearby areas to ensure they are meeting the standards established in the guidelines.

Monitor the health of certain indicator organisms within the MPA to ensure water and sediment quality is being maintained.

3.3 MAINTAINING OR RESTORING THE QUALITY OF THE WATER AND SEDIMENTS OF THE GULLY

To maintain the Gully's diverse biological communities, the quality of the Gully's habitats must be protected and maintained. Marine organisms have particular habitat preferences and these conditions are critical to determining their distribution. As well, the level of contaminants in the water and sediments affects the health of marine life, with higher than normal levels potentially resulting in increased mortality and disease, and lower rates of reproduction.

The health of the Gully is closely linked to that of the surrounding area. Large scale currents and smaller scale water movements carry suspended particles into the canyon. Oceanographic processes within the Gully itself may make it more likely to be affected by pollutants. Higher levels of trace metals have been measured in canyons along the margin of Georges Bank than in nearby areas. This difference was attributed to a higher rate of particle resuspension within the canyons. As well, retention properties of the Gully may make it more likely to accumulate particles, including suspended contaminants and garbage, than nearby areas. In one study, higher densities of garbage were collected in the Gully as compared with other areas of the Scotian Shelf.

Little is known of present levels of contaminants within the Gully. Various activities can increase the contaminant load in the canyon, such as discharges of bilge water or oil from vessels or rigs, even discharges that do not occur directly within the MPA. Garbage dumped overboard from vessels may have a direct impact on marine life (e.g., plastics ingested by whales or sea turtles) or may break down and add contaminants to the marine environment. There are existing regulations and guidelines for many of the activities that could potentially add contaminants to the marine environment.

3.4 CONSERVING OTHER COMMERCIAL AND NON-COMMERCIAL LIVING RESOURCES

In the short-term, this objective will focus on monitoring and responding to impacts of human activities on other parts of the Gully ecosystem to ensure that these activities are consistent with the objectives of the MPA. There is concern that human activities may be having impacts on little known species. The

Issue: Conserving other commercial and non-commercial living resources

Strategy: Monitor and respond to impacts of human activities on other commercial and non-commercial living resources to ensure that these activities are consistent with the objectives of the MPA.

Actions: Monitor human activities in the MPA and in nearby areas and assess their impacts on the MPA.

Exclude ballast water exchange from the Gully MPA and surrounding area.

Take management action if particular activities are shown to have an adverse affect on the MPA.

Carry out research to better understand the Gully food web and the MPA's links with surrounding areas.

maintenance of the food chain, or trophic links, in the Gully is key to maintaining biodiversity within the canyon. Research will be needed to gain a better understanding of many of the trophic links within the canyon. However, by examining the diet of marine mammals we have an indication of some of the important prey species within the MPA.

The Gully provides habitat for northern bottlenose and sperm whales that are known to prefer deep sea squid in other parts of their range. Other species such as dolphins, also feed on squid. Lanternfish are abundant in the Gully and they are also likely to be prey for toothed whales.

Blue whales are seen regularly in the Gully in August. They feed almost exclusively on krill, which are highly concentrated at the head of the canyon, within the MPA and in the arms of the trough, just outside the northwestern MPA boundary. Other species of baleen whales also feed on concentrations of krill.

The species fed on by the whales are likely to be there in high numbers and fed on by many species of fish and invertebrates. Maintaining trophic links is critical to maintaining the health and biodiversity of the Gully ecosystem.

There has been increasing concern about the introduction of exotic species in the marine ecosystem, particularly through bilge water. Little is known about

exotic species that may be found in the Gully. The introduction of exotic species is an issue of general concern for ESSIM.

The Gully and nearby waters have a long history as an important fishing area. Many of the traditional groundfish fisheries in the area are under closure or have severe restrictions. Fisheries that will continue in the Gully after the MPA is established will be monitored to ensure that catch composition is compatible with the objectives of the MPA.

REFERENCES AND RELATED MATERIALS

Dufault, S. and H. Whitehead. 1994. Floating marine pollution in 'the Gully' on the continental slope, Nova Scotia, Canada.

Gowans, S. 1999. Social organisation and population structure of northern bottlenose whales in the Gully. PhD Dissertation, Dalhousie University, Halifax, NS.

Kostylev, V.E. 2002. Benthic assemblages and habitats of the Sable Island Gully. In: D.C. Gordon and D.G. Fenton, eds. Advances in Understanding the Gully Ecosystem: A Summary of Research Projects Conducted at the Bedford Institute of Oceanography (1999-2001). Canadian Technical Report of Fisheries and Aquatic Sciences 2377. pp. 17-30.

Kostylev, V. Photographic atlas of the benthic habitats of The Gully: Summary of results 1997-2000. Canadian Technical Report of Fisheries and Aquatic Sciences. in press.

Mortensen, P.B. and L. Buhl-Mortensen. 2005. Deep-water corals and their habitats in The Gully, a submarine canyon off Atlantic Canada. In: A. Freiwald and J.M. Roberts, eds. Cold-water Corals and Ecosystems. Berlin: Springer. 247-277.

4

MANAGING THE GULLY

4.1 MANAGEMENT APPROACH

The Oceans and Coastal Management Division is the lead organization within DFO for the management of the Gully. It will take a collaborative approach to managing activities in the MPA. Many different parts of DFO, other government departments and agencies, MPA users, and other individuals with an interest in the MPA play important roles in meeting the objectives for the MPA and implementing the management plan. OCMD will coordinate the other organizations and people involved in managing the Gully.

The Gully MPA Regulations reinforce, augment, and formalize interim protection policies and measures that were in use prior to the MPA designation. Although these Regulations provide the primary tool for protecting the MPA, the provisions of other legislation, regulations, and policies also play an important role. Access to the MPA will be controlled and approved activities will be managed through the relevant provisions of several laws, including the *Fisheries Act*, *Coastal Fisheries Protection Act*, *Coasting Trade Act*, *Canada Shipping Act*, *Canadian Environmental Assessment Act* and *Species at Risk Act*. For example, DFO will use the *Fisheries Act* and fisheries management plans to ensure that fishing activities are undertaken in a manner consistent with conservation objectives of the MPA. Non-regulatory activities are also identified in the Plan and contribute to meeting the objectives for the MPA.

To address a variety of conservation concerns and management issues, a zoning scheme was developed. The scheme provides the foundation for managing activities within the MPA. Different geographic areas within the MPA were classified according to their general ecosystem characteristics and protection requirements. Protection levels vary from zone to zone according to the ecological features of the zone, its importance in meeting the overall objectives for the MPA, and its capacity to accommodate human activities.

Non-regulatory actions form an integral part of the conservation and management of the Gully. The management plan encourages the use of codes of conduct for permitted activities within the MPA and for other activities that are in the vicinity of the MPA. Agreements may be put in place to allow users to play a greater role in stewardship. Outreach activities will raise awareness of the MPA among user groups and the general public, while research and monitoring activities will broaden our understanding of the Gully ecosystem.

Protecting the health of the MPA means consideration of the activities in the surrounding marine environment. An intergovernmental and multi-stakeholder planning process for the Eastern Scotian Shelf Integrated Management (ESSIM) initiative has developed a integrated ocean management plan for regional waters surrounding the Gully. In addition to improved government coordination and stakeholder involvement in ocean planning, this initiative promotes greater stewardship and responsible ocean use inside and outside the MPA. The Gully management approach will be directed by the ESSIM guiding principles (Chapter 2), which include collaboration and adaptive management.

Offshore MPAs have unique management challenges. The distance from shore, the lack of information about deep-sea ecosystems, and the complex jurisdictional and management responsibilities have affected the development of the Gully MPA and will continue to be a consideration in the implementation of the Gully Management Plan. The different roles and responsibilities in implementing the Plan are described in more detail in Chapter 5.

4.2 THE GULLY MARINE PROTECTED AREA REGULATIONS

The Gully MPA Regulations have general prohibitions on activities in the MPA, with exceptions for specified activities and an approval process for certain others. The Regulations are divided into eleven sections and the full regulatory text can be found in Appendix 1. The Regulations apply within the boundary, and in certain circumstances also apply beyond the boundary, reflecting the connection of the Gully to the broader environment. This section provides an overview of the Regulations. Further explanation of what the Regulations mean for specific sectors can be found immediately following this section.

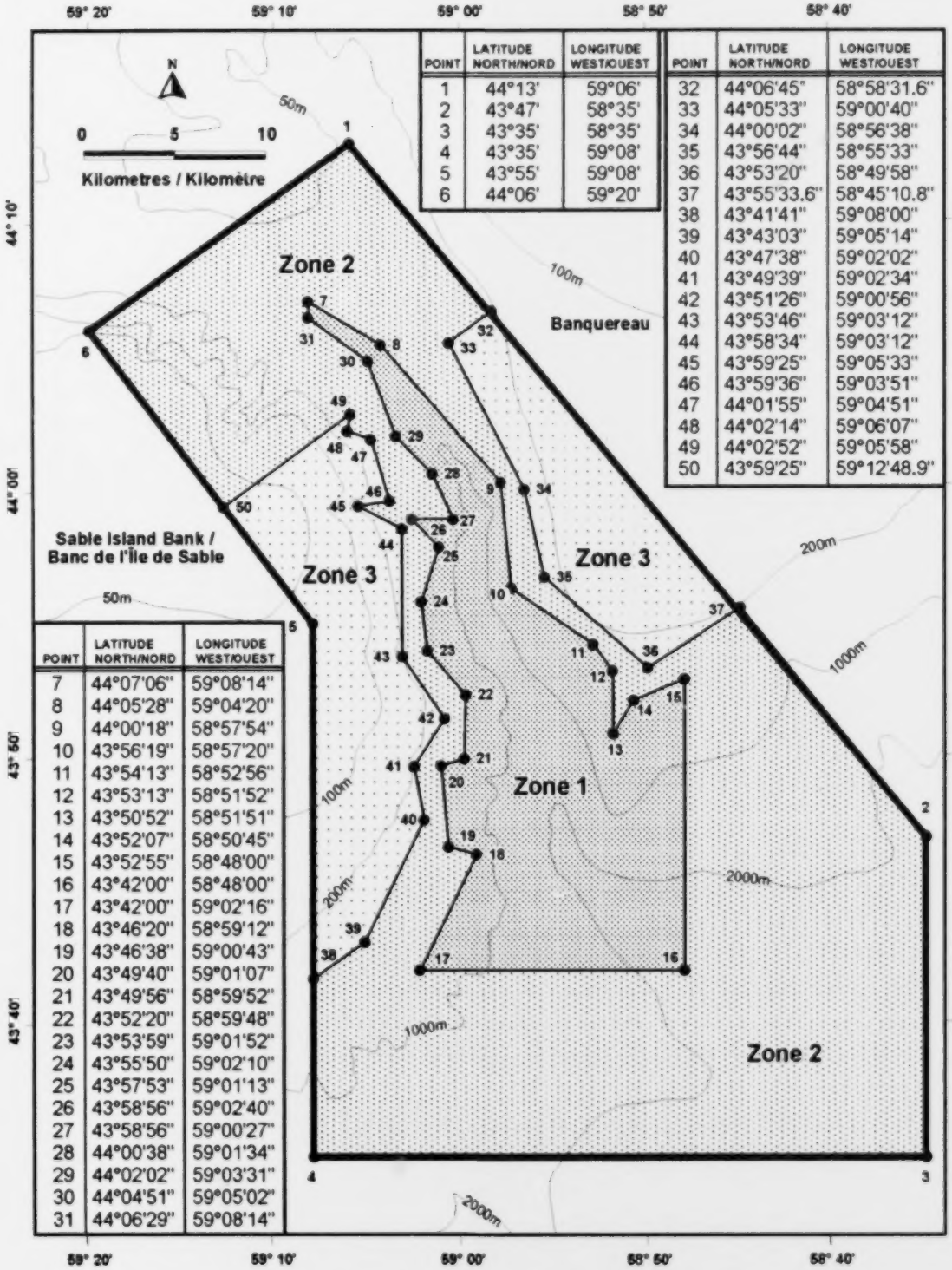
MPA BOUNDARY AND MANAGEMENT ZONES

The Regulations establish the MPA boundary and its management zones. The 2364-square-kilometre MPA is divided into three management zones (Figure 3). The outer boundary was based on the initial 1998 "Area of Interest" boundary, modified based on current understanding of the marine life and physical processes of the canyon, reviews of activities in the canyon, and consultation with stakeholders. It was simplified from the original AOI boundary for the practical purpose of using prominent co-ordinates for clarity for marine users and for surveillance and enforcement purposes.

The coordinates of the MPA are based on Canadian Hydrographic Service (CHS) chart 4045.

DESCRIPTION OF MANAGEMENT ZONES

The management zoning scheme presented here (Figure 3) reflects the conservation priorities described earlier. The dimensions, ecological characteristics, relevant conservation priorities and general management purpose for each zone are described below. Legal descriptions of these zones can be found in Appendix 1.



POINT	LATITUDE NORTH/NORD	LONGITUDE WEST/OUEST
1	44°13'	59°06'
2	43°47'	58°35'
3	43°35'	58°35'
4	43°35'	59°08'
5	43°55'	59°08'
6	44°06'	59°20'

POINT	LATITUDE NORTH/NORD	LONGITUDE WEST/OUEST
7	44°07'06"	59°08'14"
8	44°05'28"	59°04'20"
9	44°00'18"	58°57'54"
10	43°56'19"	58°57'20"
11	43°54'13"	58°52'56"
12	43°53'13"	58°51'52"
13	43°50'52"	58°51'51"
14	43°52'07"	58°50'45"
15	43°52'55"	58°48'00"
16	43°42'00"	58°48'00"
17	43°42'00"	59°02'16"
18	43°46'20"	58°59'12"
19	43°46'38"	59°00'43"
20	43°49'40"	59°01'07"
21	43°49'56"	58°59'52"
22	43°52'20"	58°59'48"
23	43°53'59"	59°01'52"
24	43°55'50"	59°02'10"
25	43°57'53"	59°01'13"
26	43°58'56"	59°02'40"
27	43°58'56"	59°00'27"
28	44°00'38"	59°01'34"
29	44°02'02"	59°03'31"
30	44°04'51"	59°05'02"
31	44°06'29"	59°08'14"

POINT	LATITUDE NORTH/NORD	LONGITUDE WEST/OUEST
32	44°06'45"	58°58'31.6"
33	44°05'33"	59°00'40"
34	44°00'02"	58°56'38"
35	43°56'44"	58°55'33"
36	43°53'20"	58°49'58"
37	43°55'33.6"	58°45'10.8"
38	43°41'41"	59°08'00"
39	43°43'03"	59°05'14"
40	43°47'38"	59°02'02"
41	43°49'39"	59°02'34"
42	43°51'26"	59°00'56"
43	43°53'46"	59°03'12"
44	43°58'34"	59°03'12"
45	43°59'25"	59°05'33"
46	43°59'36"	59°03'51"
47	44°01'55"	59°04'51"
48	44°02'14"	59°06'07"
49	44°02'52"	59°05'58"
50	43°59'25"	59°12'48.9"

Figure 3. Management zones within the Gully MPA boundary

Zone 1, Comprehensive Protection Zone, is the deep water core area. It includes the waters and habitats from the 600-metre isobath (depth contour) and deeper to the southern and eastern boundary of the DFO whale sanctuary (see Regulations for precise description). Zone 1 has an area of approximately 475 square kilometres. This Zone is afforded the highest level of protection.

This zone encompasses the deep canyon environment and includes the entire water column and ocean floor within the zone. It has been designed to protect the deep-water retention area, which is a key habitat for many deep water and shelf edge species. There is still much to learn about this area. We have a partial list of the species found in the canyon, however more work is needed to better understand the food web or physical habitat dynamics. However, based on ecological theory and habitat models for the species that we do know are present, this management zone is very sensitive to human impacts and has been given the highest level of protection.

Zone 1 contains habitat for deep diving whales, including the endangered Scotian Shelf population of the northern bottlenose whale. It is important habitat for cold-water corals.

Besides the northern bottlenose whales, many other species are found in this zone. Sperm whales, blue whales, long-finned pilot whales, striped dolphins, common dolphins, and white-sided dolphins frequent the waters of Zone 1. Lanternfish are abundant in this zone. Many species of shrimp live in the Gully and can be found throughout the water column. The animals that inhabit the deepest depths are less known but include conger eels, cat sharks, squids, sea whips, brittle stars, and many other species of fish and invertebrates.

Zone 2, Comprehensive Protection Zone with Limited Activity, is an area of varied habitats. Zone 2 contains three different areas:

- along the canyon walls, corresponding to an area with depths of about 300 to 600 metres;
- the head of the canyon, including the trough and upper feeder canyons; and
- the deep water area of the abyssal plain.

Owing to the complexity of the topography, this area contains a high diversity of marine life. Consequently, this zone has a high level of protection with a limited number of permitted activities. Zone 2 has an area of approximately 1430 square kilometres.

This large and ecologically complex zone includes a number of features that require special attention, including cold-water corals and their habitats and many of the whale species. The benthic habitats of the shallower parts of this area have been better investigated than those of Zone 1 and their high diversity has been partially documented. Bottom currents flowing through the feeder canyons in this zone carry sediments and organic matter from Sable Island Bank into the deep parts of the Gully. This management zone has a high level of protection with a limited number of permitted activities.

Zone 3, MPA Transition Zone, is the remainder of the MPA. It is bounded by the outer MPA boundary and in general corresponds to waters shallower than 300 metres. Zone 3 has an area of approximately 460 square kilometres.

This zone includes parts of the banks adjacent to the Gully. Owing to the relatively shallow depths, this area is subject to highly dynamic oceanographic processes and regular natural disturbances, such as storms. The ecosystem here is generally made up of species that recover relatively quickly from disturbance of their habitats. The habitats themselves are relatively tolerant of change. This gives management flexibility to allow activities which result in short-term disturbance but do not damage or destroy the species assemblages or their habitats. The natural variability of the ecosystem, which is expected to be much greater than in the other two zones, will guide management of this area.

Some of the primary production from this area is carried into the Gully and supports the canyon ecosystem, while fish and other mobile species travel from the banks to other parts of the MPA. Groundfish are known to overwinter in Zone 3, mainly on the slope of Banquereau in the eastern part of the MPA. Management of this zone will protect the key features of the zone and prevent impacts on the adjacent zones.

PROHIBITIONS, EXCEPTIONS AND ACTIVITY APPROVALS

General Prohibitions (Section 4)

Section 4(a) of the MPA Regulations makes it an offence for any person to:

> *disturb, damage or destroy in the Gully Marine Protected Area, or remove from it, any living marine organism or any part of its habitat.*

To protect benthic organisms and habitats, these general prohibitions also apply to the seabed [sec. 4(b)], including the subsoil to a depth of 15 metres. The application of the prohibitions is broad and includes all marine organisms and habitats within the boundary of the MPA and all human activities (unless specifically excepted by regulation).

Activities within the Vicinity of the MPA

The Gully MPA has close ecological connections with the broader Scotian Shelf ecosystem via currents and the movement of marine organisms. Section 4(c) of the Regulations prohibits activities in the vicinity of the MPA that result in the disturbance, damage, destruction or removal of organisms or habitats within the Gully MPA itself.

This regulation recognizes that activities occurring outside the boundary have the potential to cause harmful impacts within the MPA. The potential impact from each type of human activity in the region will have a different "zone of influence." In other words, one activity may affect a large area, while another may only have ecological effects in a very small area. Of particular concern are the impacts resulting from the transmission of acoustic noise and fate and transport of discharges and deposits.

In general, the closer the activity is to the MPA boundary the more likely an effect related to the prohibitions could occur. A definition of "in the vicinity" for the MPA is not provided in the Plan given the variety of current or future activities that would need to be captured. In most instances, "vicinity" will be determined on a case by case basis, taking into consideration a number of factors not limited to: specific sources, the type of receiving environment, and species. The area surrounding the MPA will be closely monitored and reviews of specific projects within the general area will be expected to directly address effects on the environment within the MPA. More discussion on "vicinity" as it relates to specific sectors is provided later in Section 4.3.

Exceptions

Sections 5 to 11 of the Regulations recognize that certain activities may be allowed to occur within the MPA without compromising the conservation objectives and prohibitions.

BOX 4. TERMS: DISTURB, DAMAGE, DESTROY, REMOVE

The terms "disturb", "damage" or "destroy", and "remove" are not defined in the MPA Regulations. Each term reflects different types of impact which may occur. For example, the term "disturb" typically reflects non-lethal impacts on individuals, e.g., behavioural effects on organisms or short term effects on habitat. By contrast, the term "destroy" typically reflects a lethal impact on organisms and a permanent or long-term effect on habitat. The term "damage" encompasses both recoverable and irrecoverable impacts. "Remove" is relatively self-explanatory and includes lethal and sub-lethal capture or taking of any organism or habitat.

The threshold for disturbance and damage varies among marine organisms and habitats. What disturbs a cetacean may be different than what disturbs benthic organisms. DFO will determine if a proposed activity is likely to contravene the prohibitions during the activity review. Over the life of this Plan, further development of indicators and reference points related to the prohibitions will take place.

Exceptions to the general prohibitions: Sections 8 to 11 of the Regulations identify activities that are permitted in the MPA provided they operate under the conditions specified by other legislation. All activities not specifically identified as exceptions are excluded from the MPA and require special approval.

The following activities do not require plan submission and approval and are permitted in the MPA provided they are carried out as required by other legislation:

- Activities carried out by the Canadian Government (Canadian Coast Guard or DND) or under their direction and supervision for:
  - national security;
  - public security, safety, and law enforcement; and
  - environmental emergency response and clean up.
- Fishing activity (in compliance with the *Fisheries Act* and licence conditions) under the following circumstances:
  - by holders of commercial fishing licences for halibut, swordfish, tuna, or shark in Zones 2 and 3; and
  - if it is other fishing activity that meets the conditions of section 8(c) of the Regulations.
- Passage of ships (and in compliance with the *Shipping Act*).
- Marine scientific research activities that are carried out or sponsored by a foreign government (approved under Coasting Trade Act).

Plan Submissions

Application

All activities not identified as exceptions to the Regulations require that a plan containing information on the activity be submitted for the approval of the Minister of Fisheries and Oceans [sec. 5 and 6]. This application must be made for activities carried out completely within the MPA as well as for those activities that include the MPA as part of a larger program. The activity plan must include:

- a statement of the purpose of the activity;
- a detailed description of the activity;
- the identity of ships and aircraft that will be used;
- the time period during which the activity will take place;
- the activity's location (in latitude and longitude);
- two copies of a report that assesses the environmental impact of the activity on the Gully MPA (including a consideration of cumulative effects);
- a list of licences, permits, authorizations, and consents applied for or obtained that are related to the activity; and
- a contact name, address, and phone number.

Unless it is a scientific activity, activities proposed must be restricted to Zone 3 of the MPA. The activity must not result in effects beyond the natural variation (Box 5) of the ecosystem of this area. Also, activities carried out in Zone 3 cannot result in effects that contravene the protection requirements of Zones 1 and 2 (i.e., see section 4 of the Regulations).

Plans must be submitted at least 60 days in advance of the proposed activity. The Minister will approve a plan within 30 days of receiving the submission if the activity does not contravene the protection requirements of the MPA.

Scientific research and monitoring is treated somewhat differently than all other activities that are subject to the plan approval requirements. Research activities that contravene the general protection requirements may be approved provided they meet specified management purposes. Proponents of research and monitoring activities are required to submit plans with the same information and within the same timelines as other activities. Further detail on research and monitoring approvals can be found later in this chapter.

An application and approval process for non-scientific activities has not been finalized. Those interested in conducting any activity should contact OCMD in order to understand the regulatory requirements.

BOX 5. NATURAL VARIATION

Natural variation is an ecological concept related to the resilience of the ecosystem and is a key component of ecosystem-based management efforts undertaken by DFO. Natural variation of the ecosystem is considered to include all components of the ecosystem: abiotic and biotic components and species, population, and community levels.

This approach recognizes that there are fluctuations within the ecosystem that must be taken into account when evaluating activities and their effects on the Gully ecosystem. For example, disturbance of benthic habitat by a particular human activity would need to ensure that it fell within the natural range and recovery from disturbance experienced for the Zone in question. The natural variability of most ecosystem components of the Gully is unknown and an area of research priority, with the goal of developing management tools which provide clear indicators and reference points.

Cumulative Effects
The plan submission process requires an assessment of cumulative environmental effects. In order to receive approval from the Minister, the proposed activity – in combination with other activities in or near the MPA – must not contribute to cumulative effects in the MPA.

ACCIDENTS

To further safeguard the MPA, all accidents, including those resulting from excepted or approved activities, must be reported to the Canadian Coast Guard within two hours of occurrence [sec. 7]. Such incidents include collisions with marine mammals, entanglement of turtles or marine mammals, spills or accidental discharges. Incidents should be reported to the Canadian Coast Guard Regional Operations Centre (tel: 1-800-565-1633).

FINES

Violations of the Regulations carry penalties under section 37 of the *Oceans Act*. Contraventions of activity approvals and conditions can also result in charges under the *Fisheries Act* and other applicable legislation, such as the *Canada Shipping Act* and *Species at Risk Act*. Convictions can result in fines and imprisonment under these Acts.

4.3 REQUIREMENTS FOR USER GROUPS: WHAT DOES THE MPA MEAN FOR ME?

All human activities carried out in and around the Gully must meet the Regulations. DFO has committed to working with regulators and industry to provide clear guidance on the application of the MPA Regulations and other management measures. This section of the Plan provides a guide for DFO, and other regulators and user groups on the Regulations, other management requirements, and future activities as they pertain to various sectors. For each sector, regulatory and non-regulatory measures and activities related to the Gully are summarized. In many cases, these build on existing measures. For example, many existing management processes have been adapted to include consideration of the Gully Regulations and ecosystem protection needs. Existing requirements will be enhanced through joint planning efforts with each sector and regular activity.

Right now, the Plan includes sections on the oil and gas, commercial fisheries, scientific research, marine navigation, military operations, marine mining, tourism and education, and submarine cable sectors. Other sectors could be added if there as needed. Information provided on each sector following this format:

- *Overview of Activity*
  - Regulator

- Activity in the Gully
- Activity around the Gully
- Ecological interactions

- *Regulatory Requirements*
  - Gully Marine Protected Area Regulations
  - Other legislation

- *Additional Requirements to meet Management Plan Objectives*
  - Currently in place
  - Future directions and actions

4.3.1 OIL AND GAS

OVERVIEW OF ACTIVITY

Regulator

The offshore oil and gas industry is regulated by the joint federal-provincial agency, the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB). This authority is exercised under the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*. Under this act, any activity related to the exploration or development of oil and gas requires approval from the CNSOPB. This approval includes a review of the environmental effects of the proposed activity. Conditions can be placed on activity authorizations to address environmental matters, as deemed appropriate by the CNSOPB.

Oil and gas activities may also be required to obtain the approval of other regulatory authorities for some of their activities. For example, pipeline construction is authorized through the National Energy Board and various activities may require *Fisheries Act* authorizations from the Department of Fisheries and Oceans.

Activity in the Gully

The Scotian Shelf and slope are important areas for oil and gas exploration and development. The area within the MPA was subject to oil and gas exploration during the 1960s and 1970s. As a result of those early exploration activities, a significant accumulation of natural gas was detected in the seabed below shallow water on the Sable Island side of the canyon. Subsequently named Primrose, the field is recognized under the Accord legislation as a significant discovery. The rights to develop this resource have not been exercised. Although little exploration has taken place in the Gully since the initial pulse of activity in the 1970s, the bank and slope geology of the MPA indicate some probability that reserves exist in addition to the Primrose field.

Activity around the Gully

Natural gas and condensate are being produced near Sable Island, approximately 30 kilometres west of the MPA. The Sable Offshore Energy Project (SOEP) is an environmental effects monitoring program with sites in and near the Gully. Much of the area surrounding the MPA was licensed for exploration during the last 10 years though many of those rights have since been surrendered to the Crown. Seismic surveys have been conducted in nearby waters, as have several exploratory drilling programs.

Ecological Interactions

Although the interactions and environmental pathways are not fully understood or studied, it is generally believed that oil and gas activities have the potential to affect species and habitats within the MPA. To date, research and management measures related to potential interactions have focused on acoustic disturbance of whales and the potential contamination of water, sediment, and biota.

REGULATORY REQUIREMENTS

Gully MPA Regulations

The Regulations prohibit activities occurring in, or in the vicinity of, the MPA that may damage, disturb, or destroy marine organisms and their habitats within the MPA.

Many of the potential impacts from this sector's activities on the Gully ecosystem are poorly understood and require a precautionary approach. Prior to the MPA designation, the industry and the CNSOPB adopted important policies and procedures to minimize the effects of exploration and production on the Gully ecosystem. The CNSOPB has not authorized exploration activities in the Gully since 1998 and the MPA has become a key consideration in environmental assessments, industry-led research, and environmental effects monitoring programs on the eastern Scotian Shelf. The principal change with a statutory protected area in place will be for operators outside the MPA be obligated to in compliance with the Regulations.

DFO and the CNSOPB have committed to the joint development of protocols and guidelines for petroleum industry activities around the MPA. The protocols will minimize impacts on the Gully ecosystem and lay out conditions for compliance with the MPA Regulations.

Activities within the MPA

The Regulations do not remove existing sub-surface rights to petroleum within the MPA boundary (i.e., Primrose Significant Discovery Licence), nor do they explicitly prohibit oil and gas activities or prevent the issuance of future petroleum rights. Under the Regulations, proponents may apply to the Minister of Fisheries and Oceans Canada for approval to conduct activities within the MPA and the Minister may approve activities within Zone 3 of the MPA if effects are within the natural variability of the ecosystem and if the activities will not result in damage or disturbance to Zones 1 and 2. However, the CNSOPB Gully Policy has prohibited exploration within the MPA since 1998.

Activities outside the MPA

The Gully MPA Regulations require that any activity carried out in the vicinity of the MPA must not damage the Gully ecosystem. This includes all petroleum exploration activities. Existing environmental protection mechanisms, such as the environmental assessment process, will provide the primary basis for controlling the effects of activities in areas outside of the MPA. Petroleum activities in the vicinity of the MPA will be assessed for potential impacts to the Gully ecosystem.

Since the CNSOPB Gully Policy does not allow exploration within the MPA, the potential for transboundary impacts from hydrocarbon activities in surrounding waters is the immediate management priority for the MPA. Petroleum activities in the vicinity of the MPA will be assessed within existing review processes and approval mechanisms, such as those in place under the *Canadian Environmental Assessment Act*, to ensure that these MPA Regulations and conservation objectives are met.

The determination of what constitutes "vicinity" in the application of the general prohibitions to activities outside of the MPA boundary will depend on the nature of the activity, the area it affects, and the sensitivities involved.

Since 1998, the CNSOPB has stated that seismic operations within 10 kilometres of the Gully require expanded environmental assessments. OCMD will work with the CNSOPB to ensure that proponents meet the requirements of the MPA Regulations.

Other Legislation

In addition to the MPA Regulations, the oil and gas industry must comply with other legislation, regulations, and policies. This section discusses some important legislation in relation to the MPA but does not provide a complete description of all the regulatory requirements pertaining to the offshore oil and gas industry.

Canadian Environmental Assessment Act (CEAA)

Oil and gas activities may be subject to one of three levels of environmental assessment under CEAA: screening report, comprehensive study, or a review panel. In all instances, more detailed and thorough treatment is required for activities proposed near the MPA. Environmental assessments will also describe enhanced mitigation measures and effects monitoring programs proposed for adjacent activities. CNSOPB is the federal government's Responsible Authority under CEAA for offshore oil and gas activities. Other government regulators will review the EA in relation to their regulatory responsibilities. For example, DFO has

responsibilities in relation to fish habitat under the *Fisheries Act* (see below) and Environment Canada has responsibilities for migratory birds.

Conditions may be placed on projects following an environmental assessment. For example, approval of the SOEP was conditional on an environmental effects monitoring program and a code of practice for Sable Island and the Gully.

Fisheries Act
Like other activities, oil and gas activities in the marine environment are subject to the habitat provisions of the *Fisheries Act* which state that no person shall carry on any work or undertaking that results in the harmful alteration, disruption, or destruction of fish habitat. Potential effects on fish habitat are normally considered during environmental assessments. All marine activities are subject to the Marine Mammal Regulations passed under the *Fisheries Act*.

Oceans Act
A Statement of Canadian Practice for the Mitigation of Seismic Noise in the Marine Environment has been drafted to cover all Canadian waters. Incorporation by reference under two Acts (*Petroleum Resources Accord Act* and *Oceans Act*) will give the statement force of law. The guidelines contained in the statement will be applied in Canadian marine waters, including the Gully. The CNSOPB is currently using these guidelines to assess activities.

Species at Risk Act (SARA)
Several species on the List of Wildlife at Risk in Canada make regular use of the Gully MPA. Proponents of activities near the Gully should ensure they are in compliance with SARA. Environmental Impact Statements (EISs) for activities in this area are expected to explicitly evaluate and state whether or not the project will affect each species at risk. In particular, section 79(2) of SARA requires that, for each listed species and its critical habitat, all potential adverse effects of the project be identified, measures to avoid or lessen those adverse effects be identified, and that a program to monitor all adverse effects be designed and implemented. Further guidance is available from the CNSOPB, Environment Canada, and DFO.

Canada Shipping Act
Industry vessels are expected to comply with all relevant legislation and shipping best practices. More details can be found in the marine navigation section later in the Plan.

Canadian Environmental Protection Act
The industry is required to meet the requirements of the *Canadian Environmental Protection Act*. Division 3 of the act concerns the disposal of materials and substances at sea. Contravening this legislation may also result in penalties under the *Oceans Act*.

ADDITIONAL REQUIREMENTS TO MEET MANAGEMENT PLAN OBJECTIVES

Currently in Place
Non-regulatory actions form an integral part of the conservation and management of the MPA, particularly when dealing with activities in the vicinity of the MPA. Voluntary codes of conduct and practice can reduce operational impacts on the Gully ecosystem. Codes stressing voluntary avoidance of the Gully have been drafted and adopted by several offshore operators, including EnCana, Marathon Canada, and the SOE Project. These codes restrict industry-related vessel and aircraft transits in the Gully. The CNSOPB and the oil and gas industry are also involved in the ESSIM initiative, which is developing and implementing an IM plan for the eastern Scotian Shelf.

Environmental assessments carried out in the vicinity of the Gully have been required to demonstrate that activities will not disturb, damage, or destroy the Gully ecosystem.

Future Directions and Actions

Management

- DFO and the CNSOPB will develop specific requirements and guidelines for environmental assessment, predictive modelling, mitigation measures, and monitoring expected for operators working near the MPA (known as "Gully Protocols"). These will be developed with input from industry, the Gully Advisory Committee, and the public. These requirements will include:

- Joint development of assessment and operational protocols for areas around the future Gully Marine Protected Area.

- Further guidance on the definition or application of "disturb, damage and destroy" and determination of "vicinity" thresholds as they relate to oil and gas, along with related operator conditions. It is understood that this determination will depend on the nature of the activity, the zones of potential influence, and the ecological sensitivities involved.

- Companies operating near the Gully will be encouraged to adopt codes of practice similar to those developed by Exxon, SOEP, EnCana, and Marathon Canada.

- As with the SOEP project, oil and gas activities in the vicinity of the Gully may be required to develop environmental effects monitoring programs.

- Future routing of oil or gas pipelines on the eastern Scotian Shelf should avoid the MPA.

Research and Monitoring

- Fate transport modeling that addresses whether discharges will reach the Gully ecosystem.

- Compilation of existing data and continued sampling of biota, substrate, and the water column for contaminants.

- Continuing studies to better understand the sounds caused by the industry, acoustic pathways, and potential effects on animal behaviour.

4.3.2 COMMERCIAL FISHERIES

OVERVIEW OF ACTIVITY

Regulator
The Fisheries and Aquaculture Management Branch of Fisheries and Oceans Canada regulates fishing activities.

Activity in the Gully
Commercial fisheries have a long history in the Gully and surrounding area (see Chapter 2). Through fisheries planning and regulatory instruments such as licence conditions, DFO has limited the expansion of fishing activities in the area since 1998.

Under the Gully MPA Regulations, there are a few fisheries permitted to operate in certain areas of the Gully. These are fisheries directing for halibut and carried out by bottom longline, and for swordfish, shark, and tuna, generally carried out by pelagic longline.

Activity around the Gully
Besides the excepted fisheries, there are several fisheries within 30 kilometres of the Gully MPA that are not permittedin the MPA. These include:

- snow crab (northern edge of Sable Island Bank/Gully trough);
- exploratory crab (slope);
- surf clam (Banquereau); and
- quahog (Sable Island Bank).

A fishery for redfish occurs in the general area but little activity has occurred near the MPA in recent years.

Ecological Interactions
Ecological interactions of fishery activities will vary from fishery to fishery but will include removal of organisms (both directed and bycatch) and may include benthic disturbance.

REGULATORY REQUIREMENTS

Gully MPA Regulations
Section 8 of the MPA Regulations provides access to a limited number of fisheries in the Gully MPA. The Gully MPA and all zones effectively remain closed to all fisheries unless provided though exception. The provisions of section 8 can be divided into two areas:

- permitted fisheries within the Gully MPA; and
- future fisheries within the Gully MPA.

Permitted Fisheries
No commercial fishing of any type is permitted in Zone 1 of the MPA.

Holders of commercial fishing licences for groundfish that are directing for halibut with longline gear and holders of commercial fishing licences for swordfish, tuna, and shark are permitted to fish in Zones 2 and 3 of the MPA, provided they are in compliance with the terms and conditions of the licence.

Since the MPA Regulations came into force, other fisheries that operate on the eastern Scotian Shelf have been excluded from the MPA through licence conditions or variation orders under the *Fisheries Act*. Under particular conditions, fisheries may be allowed in the future to operate in Zones 2 and 3 of the MPA. More detail is provided below.

Future Fisheries

There is the potential for fishing activities other than halibut, swordfish, tuna and shark in the MPA. Section 8(c) of the Regulations provides an exception for holders of a valid commercial fishing licence, if they meet each of these conditions:

(c) the licence is a valid commercial fishing licence, other than a licence referred to in paragraph (a) or (b), and the holder of the licence, when fishing for a species of fish authorized by the licence,

(i) complies with the terms and conditions of the licence,
(ii) does not cause any damage or destruction referred to in section 4 in Zone 2,
(iii) causes only damage or destruction referred to in section 4 in Zone 3 that is within the natural variation of the ecosystem in which that Zone is located, and
(iv) removes living marine organisms from Zone 2 or 3 only to an extent that is within the natural variation of the ecosystem in which Zone 2 or 3, as the case may be, is located.

During the development of the Gully MPA, there were general inquiries into future access to the Gully for: 1) new fisheries that are developing in Scotia-Fundy region, 2) the expansion of nearby fisheries into the Gully, and 3) fisheries that traditionally operated in the MPA boundaries but are currently at low abundance, e.g. cod and haddock.

At present, these fisheries are restricted from the Gully. A full assessment would be required to demonstrate that the conditions set forth in section [8c (ii-iv)] can be met before new, expanding, or re-opening fisheries would be permitted in the MPA. It is the responsibility of fisheries proponents to conduct the assessment required and demonstrate full compliance with the conditions. The Gully Advisory Committee will be part of the assessment review and

a final decision will be issued at the Ministerial level.

Because of limited scientific knowledge, it is not possible at this time to determine if any prospective fishery could meet the conditions set forth in section 8(c) of the Regulations. There is limited understanding of the abundance of most commercial species that inhabit Zones 2 and 3 of the Gully. Furthermore, there is limited knowledge of the impacts any additional fisheries in the area could have on biodiversity and habitat and how these would relate to natural variability. A procedure for evaluating and reviewing fisheries proposed for the MPA to ensure they meet the conditions of section 8(c) will be developed over the life of this Plan.

Until this assessment and review process has been developed, it will be the policy of DFO that no proposals for fisheries in the Gully MPA will be accepted or evaluated.

Other Legislation

Fisheries Act

All vessels fishing in the Gully MPA under exceptions must hold a valid licence issued pursuant to the *Fisheries Act* and be carrying out activities as required by the relevant integrated fisheries management plan or conservation harvesting plan.

Licence conditions for fisheries operating in the area list the MPA as an excluded area. In addition, several

variation orders issued pursuant to the General Fishery Regulations exclude particular fleets from the MPA.

Consideration of the Gully MPA has been included in fishing plans for the general area, including integrated fisheries management plans and conservation harvesting plans.

To support DFO's "New Emerging Fisheries Policy", DFO Maritimes Region is preparing a "Protocol for New Fisheries, Scotia Fundy Sector." It will include specific mention of areas set aside for conservation purposes and will outline how new fisheries proposed for these areas will be addressed. It should be noted that the requirement for an assessment described above is in addition to any conditions described in the "Protocol for New Fisheries."

Species at Risk Act
Several species on the List of Wildlife Species at Risk in Canada make regular use of the Gully MPA. Fishing activities in or near the Gully should ensure they are in compliance with SARA. For some fisheries this may mean requirements under section 73 of SARA.

ADDITIONAL REQUIREMENTS TO MEET MANAGEMENT PLAN OBJECTIVES

Currently in Place
An integrated fisheries monitoring system for the Gully MPA is in development to allow managers to better track fishing activity in the area.

Future Directions and Actions
Biodiversity Protection - Monitoring
DFO will continue to monitor and assess the impacts of permitted fisheries on the biodiversity of the canyon ecosystem. For example, the following activities will be required:

- Catch composition, including the age structure of targeted fish populations and catches of non-target species, will be monitored and reported regularly using both logbook and observer program records.

- Efforts will be made to collaborate with licence holders and industry representatives to gather information on fishing activities.

- Observer coverage may be directed to enhance monitoring efforts.

Biodiversity Protection – Interactions
Based on current knowledge and ongoing analysis, the focus of management and stewardship efforts will be on reducing fishing interactions. Many of these interactions are not well understood, such as interactions with cetaceans, and the following actions aim to both reduce interactions and gain a better understanding of them. The focus of management activity will be on fishing interactions with:

- Corals, such as by minimizing coral bycatch in Zone 2 by avoiding known areas of coral catch.

- Cetaceans, such as by:
  - encouraging reporting of whales caught by or entangled in gear and the promotion of their release or disentanglement;
  - providing training and equipment to support proper identification and disentanglement of cetaceans; and
  - conducting research with fishers to understand what techniques are effective in reducing the incidence of entanglements. Techniques to be investigated include the modification of setting patterns or gear.

- Species at risk, such as by monitoring compliance with SARA and interactions with currently listed species and those proposed by COSEWIC for listing.

Surveillance
The purpose of the surveillance activities is to monitor compliance with the MPA Regulations. Over the life of this plan, surveillance activities related to fisheries will include:

- Continued work on the development of the integrated fisheries monitoring and reporting system.

- Enhanced surveillance of the MPA (e.g., overflights, vessel patrols) at certain times of the year.

- Encourage enhanced reporting of fishing locations as part of current reporting protocols.

Future Fisheries

- A full assessment procedure for reviewing and considering additional fisheries in Zones 2 and 3

of the MPA will be developed to ensure that they meet conditions set forth in section 8(c).

Outreach and educational materials

- Develop materials for those licensed to fish in the Gully and the surrounding area describing the regulatory requirements for fisheries.
- Hold regular sessions with licence holders to discuss fisheries issues related to Gully MPA management.

4.3.3 SCIENTIFIC RESEARCH

OVERVIEW OF ACTIVITY

Regulator

The primary tool for regulating research within the Gully is the Gully MPA Regulations, for which the Minister of Fisheries and Oceans is the regulator. For all marine areas, Canadian researchers require licences and authorizations issued by the Minister of Fisheries and Oceans through the *Fisheries Act* and the *Coastal Fisheries Protection Act*. Most Canadian non-governmental research on living resources is approved regionally by DFO.

For researchers based outside of Canada, clearance consent is issued through the Foreign Vessel Clearance Request process under the *Coasting Trade Act* (Minister of Foreign Affairs). DFO reviews these requests as they relate to living resources research.

Activity in the Gully

Research has been conducted in the Gully for decades. In the 1960's and 70's, research focused on geology and geological processes. In the 1980's, work was done on sediment transport and circulation. In 1988, scientists at Dalhousie University began to study whale and dolphin populations in the Gully. In the 1990's, research expanded to include broader ecosystem concerns, such as primary production and fish diversity. In 1997, a scientific review of the Gully ecosystem prompted further analysis of existing data. In 1999, a two-year funded DFO Science program enabled targeted research

and data collection within the Gully. Since enactment of the Gully MPA, research and monitoring activities have included:

- spring and summer groundfish surveys (DFO);
- research on cetaceans, including vocalizations (Dalhousie University, DFO);
- water sampling and zooplankton tows (Atlantic Zone Monitoring Program);
- benthic surveys;
- studies related to seismic noise (DFO); and
- student research projects (Sea Education Association, Woods Hole).

Activity around the Gully

Much of the research and monitoring conducted within the Gully (e.g. groundfish surveys, water sampling, zooplankton tows, cetacean research) are conducted as part of broader, often shelf-wide programs. Thus, these activities also occur beyond the boundaries of the Gully. Other research and monitoring activities that occurs within close proximity to the Gully include:

- monitoring of the Sable Offshore Energy Project,
- studies on and around Sable Island (seals, birds, sharks, etc.), and
- studies related to impacts of seismic noise on the Gully MPA.

Ecological Interactions

Ecological interactions of research and monitoring activities within the Gully MPA will vary by activity type but may include:

- removal of organisms,
- benthic disturbance, and
- noise and lights (attraction or disturbance of marine mammals, fish, and birds).

REGULATORY REQUIREMENTS

Gully MPA Regulations

As a requirement of the Gully MPA Regulations [secs. 5 and 6], DFO must approve all research activities (such as biological sampling, hydrographic surveys, geological studies, etc.) conducted within the boundaries of the MPA. Both government and non-government scientists are required to submit applications, no matter what type of research they are undertaking. Scientific research carried out or sponsored by a foreign government is exempted from this particular application and approval requirement [sec. 11 (b)], provided that these activities have received the consent of the Minister of Foreign Affairs under the *Coasting Trade Act* and provided that the research is carried out according to the terms and conditions of the consent. More information on requirements for foreign-sponsored research can be found below under "Other Legislation."

Individuals, organizations, and government agencies wishing to conduct research or monitoring within the Gully MPA are required to submit an activity plan for approval at least 60 days prior to the proposed start date. This must provide detailed information on planned scientific activities, including the consideration of potential environmental impacts [sec. 5]. An application form for research in the Gully has been developed to help applicants (Appendix 4).

Following receipt of the application, DFO must then review it within 30 days to determine:

- What will be the impact on the ecology/species of the Gully from the research activity?
- Does the research add to the scientific understanding of the Gully or surrounding region?
- Are the studies being conducted or supervised by an individual recognised as qualified in the field?
- Does the research contribute to meeting the management and conservation objectives of the Gully?

The Minister will approve a plan within 30 days of receiving the submission if the activity does not contravene the protection requirements of the MPA. Table 1 provides a quick guide to the research that will be permitted in each zone of the MPA.

TABLE 1. RESEARCH PERMITTED IN EACH ZONE OF THE GULLY MPA

RESEARCH IN ZONE 1	RESEARCH IN ZONE 2	RESEARCH IN ZONE 3
Carried out for the purpose of:	**Carried out for the purpose of:**	Carried out for the purpose of:
1. managing the MPA or monitoring the effectiveness of the conservation measures being implemented	**1. managing the MPA or monitoring the effectiveness of the conservation measures being implemented**	1. managing the MPA or monitoring the effectiveness of the conservation measures being implemented
2. investigating incidents that may have an environmental impact on the MPA	**2. investigating incidents that may have an environmental impact on the MPA**	2. investigating incidents that may have an environmental impact on the MPA
or	**or**	or
If carried out for a purpose other than above will not result in any damage or destruction (as referred to in section 4 of the Regulations) in zones 1 and 2.	**If carried out for a purpose other than above will not result in any damage or destruction in zones 1 and 2.**	If carried out for a purpose other than above, will not result in damage, or destruction in zones 1 or 2, and in Zone 3, will only result in disturbance, damage or destruction is within the natural variation of the ecosystem of that zone.

Other Legislation
Depending on the activity being conducted, there may be other regulatory requirements, i.e. permits, required to conduct research in the Gully MPA. In order to determine the potential for other regulatory requirements, those wishing to conduct research or monitoring within the Gully MPA should contact the Oceans and Coastal Management division (OCMD) as early as possible. Some examples of other regulatory requirements are described below.

Fisheries Act
Section 51 of the General Fishery Regulations states that "No person shall fish for experimental, scientific, educational or public display purposes unless authorized to do so under a licence." Section 52 enables the Minister of Fisheries and Oceans to issue a licence for these purposes if it would be in keeping with the proper management and control of fisheries. Conditions of a scientific collection and transfer licence vary, but typically this licence must be present on the vessel conducting research. A licence fee of $100 is required if fishing for public display purposes.

Oceans Act
A Statement of Canadian Practice for the Mitigation of Seismic Noise in the Marine Environment has been drafted to cover all Canadian waters. Incorporation by reference under two Acts (*Petroleum Resources Accord Act* and *Oceans Act*) will give the statement force of law. The guidelines contained in the statement will be applied in Canadian marine waters, including the Gully. Those conducting geophysical research will be expected to comply with these guidelines.

Species at Risk Act
Several species on the List of Wildlife Species at Risk in Canada make regular use of the Gully MPA. Research activities in or near the Gully should ensure they are in compliance with SARA.

SARA places strict restrictions on human interaction with listed species, their residences, and critical habitat. However, section 73 of the *Species at Risk Act* states that the competent Minister may issue a permit to conduct scientific research relating to the conservation of a listed species, any part of its critical habitat, or the residences of individuals to a qualified person as long as:

(*a*) all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted;

(*b*) all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and

(*c*) the activity will not jeopardize the survival or recovery of the species.

DFO's Aquatic Species at Risk website has information on how to apply for a SARA permit for scientific research and education *http://www.dfo-mpo.gc.ca/species-especes/permits/sarapermits_e.asp*

Coasting Trade Act (Foreign Research Requirements)
Section 3 of the *Coasting Trade Act* contains provisions related to foreign or non-duty paid ships engaged in ocean research activity commissioned by the Department of Fisheries and Oceans or operated or sponsored by a foreign government that has sought and received the consent of the Minister of Foreign Affairs to conduct marine scientific research.

A foreign research vessel holding a consent under the *Coasting Trade Act* is exempt from the requirements to submit a scientific research activity plan to DFO. However, scientific research carried out with this consent must be conducted in accordance with all other environmental protection and management requirements contained in the MPA Regulations. In addition, the Minister of Foreign Affairs may attach terms and conditions to the consent. DFO reviews these foreign research applications and provides advice to the Minister of Foreign Affairs on terms and conditions related to the consent. As well, section 44 of the *Oceans Act* enables the Minister of Fisheries and Oceans to request that conditions be attached to *Coasting Trade Act* consents, requiring a foreign or non-duty paid ship to supply the results of marine scientific research conducted by that ship in Canadian waters.

ADDITIONAL REQUIREMENTS TO MEET MANAGEMENT PLAN OBJECTIVES

Currently in Place

Although not a requirement, researchers are encouraged to collaborate with OCMD through the research application process to ensure application requirements are met. Many of the management objectives for the Gully require a better scientific understanding of the MPA, thus OCMD wishes to encourage research in the MPA while at the same time meeting the regulatory requirements for the MPA.

Researchers are required to conform to the activity description that they have submitted. A change to the research plan while at sea may mean that the research is no longer in compliance with the MPA Regulations. Thus, if sampling gear may change depending on initial research results or if back-up stations/sampling locations may be needed to ensure the successful deployment of equipment, this information should be included in the application.

Future Directions

Development of guidelines for applying to conduct research in the Gully MPA

To ensure consistency in the approval process, DFO will develop a guide and application form for both managers and prospective researchers on application requirements. This guide will build on the Regulations which identify the basic information requirements of such an application.

Development of a Gully MPA research and monitoring code of conduct

For approved research activities, a research "code of conduct" specific to the Gully will help to encourage high quality research that minimizes ecosystem disturbance. These will reflect general conservation concerns outlined in the management plan but should also include guidelines surrounding specific research activities, *e.g.* cetacean research. DFO will develop a code of conduct for its own research and monitoring activities. The Gully Science Advisory Group will work with the scientific community to encourage others to adopt these guidelines.

Development of a research and monitoring strategy for the Gully MPA

See section 4.4 for additional information.

Website availability

The application form and other materials developed to guide scientific research on the Gully will be made available on the Gully website *http://www.mar.dfo-mpo.gc.ca/oceans/e/essim/gully/essim-gully-e.html*

4.3.4 MARINE NAVIGATION

OVERVIEW OF ACTIVITY

The Gully MPA is located in the vicinity of several major international shipping routes through the Northwest Atlantic region. The key shipping patterns in the area include traffic between Canada and ports in the Caribbean region, the eastern seaboard of the United States, Europe, the Mediterranean Sea, and Africa. Commercial vessel traffic through this area includes container vessels, tankers, bulk carriers, and various types of general and specialized vessels. In addition to commercial shipping, the area is traversed by various government vessels (e.g., Canadian and foreign naval vessels, the Canadian Coast Guard), research vessels (including foreign research vessels), cruise ships, smaller recreational vessels, and fishing vessels. As well, vessel activity associated with oil and gas exploration and development occurs in the area, including seismic survey vessels, supply vessels and various service vessels.

Regulators

Several departments and agencies have roles in regulating marine transportation and navigation. Transport Canada has responsibilities for aspects of the *Canada Shipping Act* related to ship safety and ship-source pollution prevention. Transport Canada also has the lead responsibility for administering various standards and requirements of the International Maritime Organization.

The Canadian Coast Guard has a regulatory role in pollution prevention and response. In addition, it provides marine communications and traffic services, marine aids to navigation, and search and rescue services for the entire sector.

Activity in the MPA

The level of vessel traffic in the Gully MPA is low as compared with traffic levels in other parts of the region. The primary types of vessels operating in the

MPA are fishing, scientific research, and federal government vessels. Commercial vessels may also enter the MPA while en route to regional ports or shipping lanes.

Activity around the MPA

The major trans-Atlantic shipping lanes (Great Circle Routes) typically pass beyond 30 kilometres to the south or north of the Gully MPA and Sable Island. With the exception of Europe-United States traffic, the key factors influencing traffic around the Gully MPA include international shipping to and from the major port of Halifax, tanker traffic associated with the Strait of Canso and Placentia Bay, and traffic entering and leaving the Cabot Strait (i.e., to and from the St. Lawrence Seaway and Great Lakes). Vessel activity associated with fishing and oil and gas development also occurs in areas around the MPA.

Ecological Interactions

The primary ecological interactions related to marine navigation are the potential release of ship-source pollutants and discharges (including oil and ballast water), noise caused by vessels, and vessel interactions with marine life, particularly cetaceans.

REGULATORY REQUIREMENTS

Gully MPA Regulations

The MPA Regulations permit the exercise of international navigational rights in the MPA year round. Vessels must operate in compliance with all relevant provisions of the *Canada Shipping Act* and related Regulations, and all relevant requirements of the International Maritime Organization. Vessels in non-compliance with these requirements contravene the MPA Regulations and are subject to penalties under the *Oceans Act*, as well as those under the *Canada Shipping Act*.

Under section 7 of the Regulations, vessels must report all accidents to the Canadian Coast Guard via any Marine Communications and Traffic Services Centre within two hours of occurrence or detection.

Other legislation

Fisheries Act (Marine Mammal Regulations)

Vessels must comply with all relevant provisions of the Marine Mammal Regulations under the *Fisheries Act*. These Regulations prohibit any form of harassment of marine mammals. Specific guidance for

vessels can be found below, and is also provided in the Canadian Coast Guard's *Annual Notices to Mariners 1 to 46*, A.2, Marine Mammal Guidelines and Marine Protected Areas.

Species at Risk Act

Several species on the List of Wildlife Species at Risk in Canada make regular use of the Gully MPA. Vessels transiting the Gully should ensure they are in compliance with SARA.

Canada Shipping Act

Vessels must comply with the provisions of the *Canada Shipping Act* and related regulations. This addresses matters relating to safety of navigation and pollution prevention, such as national standards for oil concentrations in discharged water. Of particular interest are the Ballast Water Control and Management Regulations which prohibit the unauthorized exchange and discharge of ballast water in the Gully MPA. The Annual Notice to Mariners will be used to advise vessel operators of any new requirements.

Migratory Birds Convention Act

Vessels must comply with the provisions of the *Migratory Birds Convention Act* for the protection of migratory birds in Canada's Exclusive Economic Zone. Contraventions of the *Migratory Birds Convention Act* in the MPA may also result in penalties under the *Oceans Act*.

ADDITIONAL REQUIREMENTS TO MEET MANAGEMENT PLAN OBJECTIVES

Currently in Place

The following operational procedures must be fol-

lowed in order to safeguard the MPA. These procedures can also be found in the Canadian Coast Guard's *Annual Notices to Mariners 1 to 46*, A.2, Section 5A, General Guidelines for Marine Protected Areas.

Canadian Hydrographic Service (CHS) charts and electronic products have been updated to include the MPA boundaries.

Marine Mammal Protection

All marine mammal species are protected in the MPA. The main species of concern are northern bottlenose, blue, and North Atlantic right whales. For these species, the key threats associated with shipping are acoustic disturbances and vessel collisions. Vessels must adhere to the following measures to ensure marine mammal protection:

- Vessels should avoid passage through this area if possible. Avoidance is the most effective means to eliminate or reduce acoustic disturbances and vessel collisions.

- If passage through this area is required, vessels must transit at a reduced, safe speed and post a look-out to increase the likelihood of sighting and avoiding marine mammals. Increased caution must be exercised in conditions of reduced visibility, such as rain, fog, rough sea state, or at night. It is important to be aware that marine mammals often travel in small groups dispersed over an area of several miles.

- Vessels must adhere to the following operating measures while manoeuvring around any marine mammal activity:

  - Avoid any sudden changes in speed or direction.
  - Avoid heading directly toward marine mammals.
  - Travel parallel to marine mammals.
  - If it is not possible to manoeuvre around marine mammals, slow down and wait until animals are more than 400 metres (0.215 nautical miles) away before resuming speed.
  - If operating a sailing vessel with an auxiliary motor, leave it in idle or use the echo sounder to signal presence.

- Vessels must report any marine mammal collisions, entanglements, strandings, distressed animals, or any other incidents to the Canadian Coast Guard via any Marine Communications and Traffic Services Centre (1-800-565-1633). If possible, sightings of northern bottlenose, blue, or North Atlantic right whales should also be reported.

Pollution Prevention

Vessels must adhere to the following measures to ensure the protection of marine environmental quality in the MPA:

- Vessels must avoid all discharges in the MPA.

- Vessels should also avoid discharging materials within a minimum distance of 50 kilometres (27 nautical miles) from the MPA.

Future Directions and Actions

Vessel traffic analysis and monitoring

The compilation and maintenance of a near-real time picture of marine activity using multiple information sources and technologies will assist in the monitoring and management of the MPA. This would be particularly useful for the management of vessel interactions with marine mammals and for environmental monitoring and response.

Oceanographic modelling

The development of an operational circulation modelling system for the MPA will enable the provision of predictive and near real-time advice for managing potential inputs, including ballast or contaminated water discharges.

Evaluation of requirement for international cautionary designation

The ongoing monitoring of vessel traffic activity in the MPA will be used to determine potential risks to the marine environment and wildlife, and the future requirement for an international cautionary designation under the International Maritime Organization (e.g., Area to be Avoided) to augment existing controls.

Mariner awareness and education

The dissemination of relevant information to mariners and the marine transportation sector is an important tool to increase awareness and promote compliance with the requirements of the MPA. This may include information materials for use onboard vessels, such as wall cards or CD-ROMs. The poten-

tial for the use of automated broadcasts to approaching vessels using Automatic Information Systems (AIS) is also under consideration.

4.3.5 MILITARY OPERATIONS

OVERVIEW OF ACTIVITY

Canada's Maritime Forces Atlantic (MARLANT) engage in a range of operations and activities in the region, including maritime surveillance, sovereignty patrols, training and combat readiness exercises, search and rescue, and support to other government departments for law enforcement and fisheries and environmental protection. MARLANT uses a variety of platforms, including patrol frigates, coastal defence vessels, destroyers, submarines, ship-borne helicopters and long-range patrol aircraft.

Military training exercise are restricted to designated exercise areas off Nova Scotia. Each exercise area is zoned for specific types of activities involving surface, sub-surface and air training operations. Foreign military vessels may also operate in the regional exercise areas with the permission of the Canadian Forces.

Regulator
The Department of National Defence regulates the activities of Canada's Forces, including the Maritime Forces.

Activity in the MPA
The upper portion of the Gully MPA is located in the military exercise area known as Quebec 3 (Q3, see Figure 4). This exercise area is designated for sub-surface training activities, and excludes live fire operations. As a matter of practice, Canadian and foreign military exercises undertaken in the Q3 area do not occur in the MPA.

MARLANT carries out surveillance patrols at the request of DFO by long-range patrol aircraft or patrol frigates en route to offshore patrol areas. The purpose of these surveillance patrols is to establish a regular presence in the MPA and to detect and/or identify vessels in the MPA.

As a matter of practice, MARLANT does not undertake activities in the Gully MPA unless at the request of DFO.

Activity around the MPA
The only exercise area in the immediate vicinity of the MPA is Q3. This exercise area is bordered to the north by Q2 and to the west by J, both designated for sub-surface training. These exercise areas are used infrequently by MARLANT.

Military transits may occur in the vicinity of the MPA on a year round basis. Military transits in the area also occur during surveillance patrols requested by DFO.

Ecological Interactions
The main types of ecological interactions related to military operations are potential noise inputs (including sonar), ship-source pollutants and discharges, and contamination from weapons and equipment.

REGULATORY REQUIREMENTS

Gully MPA Regulations
The MPA Regulations provide an exception to the general prohibitions and requirements for activity

plans for Canadian military vessels and aircraft if their activities are for the purpose of public safety, law enforcement, or national security and sovereignty [sec. 10 (a)]. Foreign military vessels and aircraft are in compliance with the Regulations if they are operating for these same purposes in cooperation with or under the command of the Canadian Forces.

An exception to the general prohibitions is also made for military vessels and aircraft that are operating for the purpose of emergency response under the direction, command, or control of the Canadian Coast Guard [sec. 10 (b)].

When not operating for the purposes described above, Canadian and foreign military vessels must adhere to the requirements found in the relevant sections of the MPA Regulations. Thus, if military vessels are transiting in the vicinity of the MPA, they must meet the requirements described earlier in the Plan under Marine Navigation (4.3.4). If they are carrying out scientific research, they must meet the requirements described under the Scientific Research heading (4.3.3). Foreign military vessels conducting scientific research must follow the same procedures as other foreign research vessels.

Activities not mentioned above and carried out by Canadian military vessels, such as training, must adhere to the activity submission and approval provisions found in the Regulations [sec. 5 and 6]. Foreign military vessels involved in activities with the permission of the Canadian Forces must also adhere to the plan submission and approval provisions.

Canadian and foreign military vessels and aircraft are required to report all accidents and incidents in the MPA to the Canadian Coast Guard via any Marine Communications and Traffic Services Centre within two hours of occurrence [sec. 7].

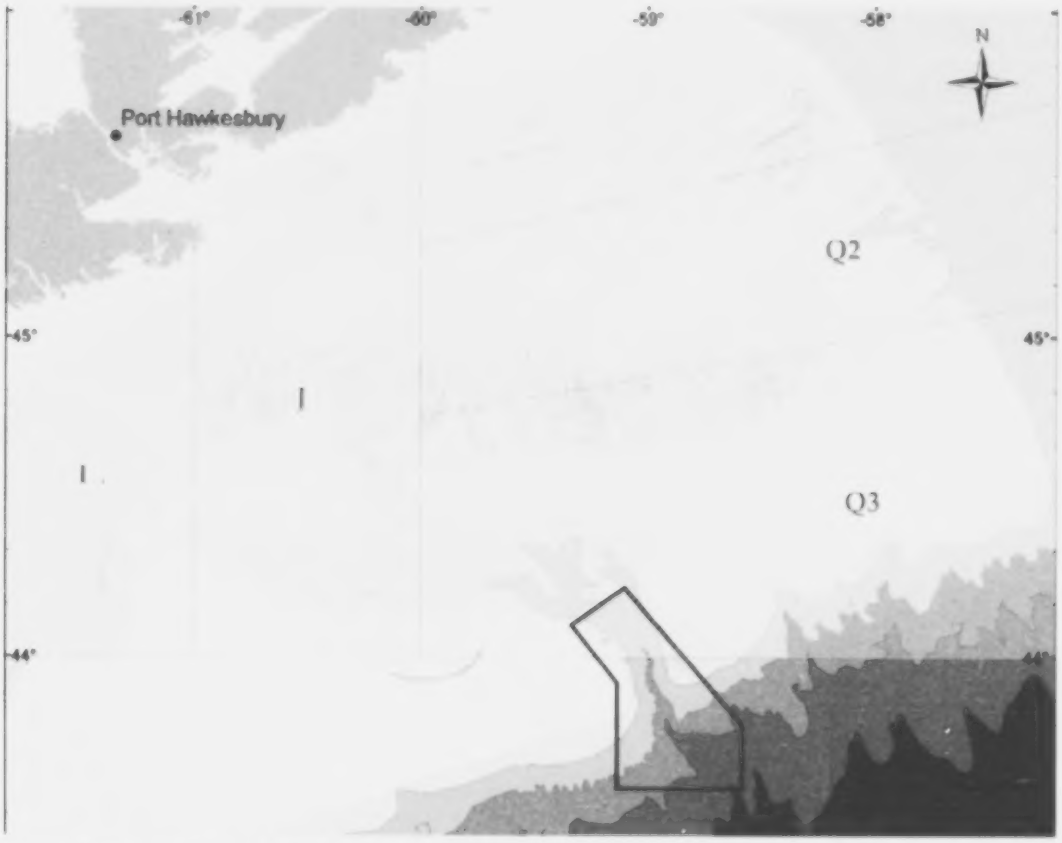


Figure 4. Military exercise areas (shaded orange) in the vicinity of the Gully MPA (outlined in green).

ADDITIONAL REQUIREMENTS TO MEET MANAGEMENT PLAN OBJECTIVES

Currently in Place

The Maritime Forces have issued a standard operating procedure to govern activities of military vessels and aircraft in MPAs. The procedure is designed to safeguard MPAs through controls and restrictions on certain types of activity. Standard prohibitions are in place for the deployment of active sonar and towed arrays and the depositing of any substance, including expendable bathythermographs, in MPAs.

MARLANT has also developed an environmental management plan for the regional exercise areas. This plan provides additional information and mitigation measures for military activities in the exercise areas.

When transiting the MPA, Canadian and foreign military vessels should follow the operational guidance and procedures for vessel passage contained in the Canadian Coast Guard's *Annual Notices to Mariners 1 to 46, A.2,* Section 5A, General Guidelines for Marine Protected Areas, and as described in the Marine Navigation section of the Plan (4.3.4).

Future Directions and Actions

Area surveillance, monitoring, and information sharing

MARLANT provides an important capability for surveillance, monitoring, and presence in the MPA. DFO and MARLANT will continue to cooperate in the surveillance of the MPA and the timely sharing of information.

Scientific research and understanding

MARLANT has useful capabilities to support scientific research activities in the MPA. As part of the cooperative arrangement between DFO and MARLANT for MPA surveillance and monitoring, involvement of military vessels and aircraft in research activities may be requested.

Low-frequency active sonar (LFAS)

The Canadian government will continue to provide information to the U.S. government related to the use of low-frequency active sonar on the east coast. Information supporting the inclusion of the Gully as an Offshore Biologically Important Area in the LFAS environmental impact statement has been submitted to the U.S. government. DFO and DND will continue to work together to ensure that foreign military activities do not contravene the MPA Regulations.

4.3.6 MARINE MINING

OVERVIEW OF ACTIVITY

Regulator

Currently, there are no marine mining operations in Canada's offshore and no marine mining management regime. In 1999 the Offshore Minerals Management Initiative, led by the Intergovernmental Working Group on the Mineral Industry - Task Force on Offshore Mining, began consultations with the public and communities on ways to manage Canada's offshore mineral resources. This effort is currently inactive.

Activity in the Gully

There is no marine mining in the Gully.

Activity around the Gully

There is no marine mining near the Gully. A preliminary study by Natural Resources Canada to examine the potential for aggregate mining on the Scotian Shelf suggested that Banquereau could provide commercial level deposits.

Ecological Interactions

If carried out, marine mining could be expected to cause benthic disturbance, deposition, and discharges in the water column and on the seafloor.

REGULATORY REQUIREMENTS

Gully Marine Protected Area Regulations

The removal of any part of the seabed, including the subsoil (to a depth of 15 metres) is prohibited under the Regulations, unless it is carried out by an excepted activity. Any proponent of marine mining activities in the MPA would be required to submit an activity plan and any proposed activity would automatically be restricted to Zone 3 of the MPA [sec. 5 and sec. 6]. Based on current mining practices and understanding of the Gully ecosystem, it is considered unlikely that marine mining would be able to meet the conditions for activity approval in Zone 3.

Other Legislation

Any mining activity that was considered for the Gully

would also be required to meet the requirements of other legislation, such as the *Canadian Environmental Assessment Act*, *Fisheries Act*, and *Species at Risk Act*.

ADDITIONAL REQUIREMENTS TO MEET MANAGEMENT PLAN OBJECTIVES

Currently in Place
None at this time.

Future Directions and Actions
It is considered unlikely that mining activities will be proposed in the area of the Gully over the life of the Plan, thus no future actions are proposed. In the event that marine mining policy efforts are initiated again in Canada, this issue would be re-evaluated, with the expectation that mining would be excluded from the MPA.

4.3.7 TOURISM, RECREATION, AND EDUCATION

OVERVIEW OF ACTIVITY

Regulator
Transport Canada regulates commercial vessels, such as cruise ships; requirements for pleasure craft are regulated by Transport Canada (supported by the Canadian Coast Guard); recreational fishing is regulated by DFO; whale watching is regulated by DFO; and research for educational purposes is regulated by DFO.

Activity in the Gully
The distance of the Gully from the coast has to date limited tourism and recreational activity in the area. Despite this, there are anecdotal reports of visits to the Gully. Apart from visits by the Sea Education Association, there are thought to be few directed tourism or education-related trips. Nevertheless, based on experience in other areas, there is eco-tourism interest in offshore marine mammal areas and growing potential for offshore tourist excursions.

Activity around the Gully
Apart from land-based tourism on Sable Island, little is known about tourism activities around the Gully; however, due to its remote location, activity levels are expected to be very low.

Ecological Interactions
The potential impacts of regular visits, such as by whale watching or recreational vessels, are unknown and have not been evaluated. Increased vessel traffic and presence may result in interactions with and negative impacts on whales.

REGULATORY REQUIREMENTS

Gully MPA Regulations
Directed tourism and education activity proposed within the MPA requires approval from DFO. This includes whale watching and filming or photographic operations. Those proposing activities must submit a plan to DFO at least 60 days prior to the activity. Prospective operators should meet with DFO prior to submitting an activity application for Ministerial approval.

The activity would need to meet the conditions of the Regulations: activities other than scientific research activities must be limited to Zone 3 and not result in any disturbance, damage, destruction, or removal of Zones 1 or 2. Directed tourism and commercial whale watching, without a research component, can not occur in Zones 1 and 2. Research carried out as part of educational programs may be permitted in Zones 1, 2, or 3. Any operators are strongly encouraged to formulate a robust research component (e.g., cetacean photo-identification, instrument deployment, oceanographic measurements etc.) as part of their application. Researchers, including those conducting teaching programs at sea, should refer to the Scientific Research section (4.3.3) for more information on applying to carry out scientific research.

ADDITIONAL REQUIREMENTS TO MEET MANAGEMENT PLAN OBJECTIVES

Currently in Place
None at this time.

Future Directions and Action
Due to the remoteness of the Gully, onsite visitor enjoyment is not an objective for the MPA, nor is it a major consideration and focus of management efforts at this time. Reports of the growth in high-

cost adventure and ecotourism in the Northeast U.S. and Atlantic Canada has prompted some discussion and concern about these activities as future potential uses of the Gully. At present, whale watching would be the primary activity of interest as well as the activity of most concern.

The impact of existing vessel traffic on whales is unknown and therefore increased vessel traffic is discouraged. If a demand is identified, a thorough evaluation of these activities will be carried out, (e.g., vessels carrying capacity).

There has been interest by film, television, and print media in developing products related to the Gully. Capturing the Gully on film for public broadcast purposes is supported in principle to meet research, education and awareness objectives. DFO will support productions that meet both high research and educational values.

Relevant tourism industry associations and known operators in the region will be provided with information on the ecological sensitivities of the Gully and the regulatory requirements for the MPA. Other outreach activities will be carried out as necessary.

4.3.8 SUBMARINE CABLES

OVERVIEW OF ACTIVITY

Submarine cables include both telecommunications cables and power cables. At the present time, only telecommunications cables are present in Nova Scotia's offshore.

Regulators
Industry Canada issues licences for terminating and through international submarine telecommunications cables under the International Submarine Cable Licences Regulations of the *Telecommunications Act*. Future power cables in Nova Scotia's offshore would be regulated by the National Energy Board and the Canada-Nova Scotia Offshore Petroleum Board.

Activity in the Gully
There are currently no active submarine cables in the Gully. One or more abandoned telegraph or telecommunications cables may be present.

Activity around the Gully
There are currently no active submarine cables within 30 kilometres of the Gully.

Ecological Interactions
The placement of submarine cables requires benthic disturbance through burying or placing the cable on the seabed. Deposits of dredged materials side-cast onto the seabed may also occur. Cable repairs and salvage may also result in benthic disturbance.

REGULATORY REQUIREMENTS

Gully MPA Regulations
Any activity proposed in the MPA, other than an excepted activity specified in the Regulations, requires approval from DFO. This includes submarine cable placement. Those proposing to lay a cable must submit a plan to DFO at least 60 days prior to the activity. The activity would need to meet the conditions of the Regulations: activities other than scientific research activities must be limited to Zone 3 and not result in any disturbance, damage, destruction, or removal of Zones 1 or 2.

Disturbance of the seabed of the Gully is not permitted under the Regulations. Since submarine cable placement usually requires the disturbance of the seabed, the proponents would have to demonstrate that they would not affect Zones 1 or 2 of the MPA.

The proposed salvage of submarine cables in the MPA would be subject to the same requirements.

Other Legislation
The placement of submarine cables in the MPA

would have to conform to all relevant legislation, including the International Submarine Cable Licences Regulations of the *Telecommunications Act*, the *Fisheries Act*, the *Canadian Environmental Assessment Act*, and the *Species at Risk Act*.

ADDITIONAL REQUIREMENTS TO MEET MANAGEMENT PLAN OBJECTIVES

Currently in Place
None at this time.

Future Directions and Actions
Develop a policy on avoidance of the Gully MPA by submarine cables in collaboration with the industry and regulators.

4.4 RESEARCH AND MONITORING IN THE GULLY MPA

Decades of research and monitoring activity in and around the Gully were instrumental in leading to its designation as an MPA. Now that the MPA has been established, research and monitoring will continue to contribute in a substantial way to the ongoing management of this area. Meeting the research and monitoring objectives is important for managing the MPA appropriately.

Research and monitoring within the Gully MPA will be a collective effort involving universities, government agencies, industry, NGOs and others. A strategic research and monitoring framework will be required to ensure that these efforts are coordinated in an effective and efficient manner that helps to achieve the conservation and management objectives of the MPA. A full research and monitoring document will be developed over the life of the Plan.

GUIDELINES FOR RESEARCH AND MONITORING

Research
The objective of conducting research within the Gully MPA is to increase our understanding of the physical, chemical and biological processes important for the Gully ecosystem, including interactions with human activities, in a manner that supports and is consistent with the conservation and management objectives of the MPA. Research to contribute to our knowledge of the human history and socio-economic importance of the MPA and surrounding area will also be encouraged.

Gully MPA research should:

- inform or contribute toward the conservation of biodiversity, habitat, and productivity within the Gully;
- address issues that are relevant to the management of the Gully MPA;
- encourage multidisciplinary cooperation, partnerships, and resource sharing; and
- be conducted in an ecologically sensitive manner.

Researchers permitted to conduct research within the Gully MPA are encouraged to:

- communicate the results of Gully research to the managers of the Gully MPA in a timely and efficient manner; and
- communicate the results of Gully research to a

broad audience, including the international community, the Canadian public, and other interested parties.

Monitoring
The objective of conducting monitoring within the Gully MPA is to provide managers with accurate and timely information necessary for the conservation and management of the Gully MPA.

Gully MPA monitoring should:

- measure ecosystem parameters that are useful and relevant for management;
- measure parameters with adequate frequency to enable detection of trends or changes at scales appropriate for management action;
- provide information on the state and natural variability of the Gully ecosystem;
- provide information on the human activities occurring in or near the Gully;
- enable detection of human impacts; and
- be cost and resource efficient

ACTIVITIES

Overall responsibility for the coordination of research and monitoring rests with DFO. However, the conduct of research and monitoring is expected to be a collaborative effort involving a variety of stakeholders. The following strategies will help to provide guidance and direction on the development of a comprehensive Gully Research and Monitoring Program:

Develop a Research and Monitoring Strategy for the Gully MPA
A Research and Monitoring Strategy for the Gully MPA will serve to provide context, strategic direction, and justification for the Gully MPA Research and Monitoring Program. The Gully MPA Research and Monitoring Framework will include:

- research and monitoring goals and objectives;
- short-term and long-term research and monitoring priorities;
- monitoring indicators, reference points and protocols; and
- research approval and funding processes.

Identify a Gully Science Coordinator
The Gully Science Coordinator will work with researchers on the research approval process and initiate other activities related to the research and monitoring strategy. This role is currently being filled by the Oceans and Coastal Management Division.

Establish a Gully MPA Science Advisory Group
A Gully MPA Science Advisory Group will be established to provide guidance to managers on the design and implementation of the Gully Research and Monitoring Framework, as well as to contribute to the review of research applications. This advisory would report to, and may be formed as a subcommittee of the existing Gully Advisory Committee.

Initiate Annual Gully Science Symposium
A Gully Science Symposium of one or two days will be held every one to two years (on recommendation of the Science Advisory Group) to allow for discussion of research and monitoring results and to encourage collaborative and coordinated planning for the coming year. Symposium presentations and discussion will be published in a proceedings series and posted to the Gully website.

Establish Codes of Conduct for Research and Monitoring
DFO will develop guidelines for conducting research and monitoring within the Gully MPA that are consistent with and that build upon the requirements outlined within the Regulations. It is expected that others may adopt these guidelines and make reference to them in applications to conduct research within the Gully.

Identify and Solicit Funding for Gully Research and Monitoring
Efforts will be made to secure ongoing funding for research and monitoring within the Gully MPA. Some of this funding is expected to come from within DFO, though efforts will be made to identify and solicit external sources of funding.

Conduct Research and Monitoring
Carry out the research and monitoring activities are to be carried out according to the priorities identified and

using the practices established in the codes of conduct.

Disseminate Research and Monitoring Results
Communication and dissemination of research and monitoring results will be necessary to ensure effective management of the Gully MPA. Tools, such as an electronic newsletter, workshops (see pg. 53), and the Gully website, will be developed to help researchers and managers exchange research and monitoring results in a timely and efficient manner.

4.5 EDUCATION AND COMMUNICATION STRATEGY

To meet the management and stewardship objectives described in Chapter 2, a dedicated effort to provide information to a variety of Canadians is required. This section describes the overall approach to providing information on the Gully MPA to affected user groups and all Canadians.

Since the Gully is an offshore site more than 200 kilometres from the coast of Nova Scotia, it offers few hands-on educational opportunities as compared with coastal marine protected areas. However, the MPA provides an excellent opportunity to raise awareness among the general public of deep ocean environments. It will also allow the public to learn about marine protected areas in general, as this designation is still relatively in Canada.

For the MPA to be successfully managed, it is important that the public, particularly affected user groups, are aware of the MPA designation and Regulations. Outreach and education activities are expected to improve compliance with the Gully Regulations. For that reason, providing information about the MPA is an objective of the management plan.

To contribute to the successful implementation of a network of MPAs in Canada, those involved with the establishment of MPAs in other parts of the country should be aware of the process taken with the Gully and the challenges that were faced. The lessons learned from the designation of the Gully MPA will be documented and shared with colleagues and the public.

ACTIVITIES

Education and communication activities will be carried out largely by DFO. It is expected that other regulatory agencies, such as the CNSOPB, Parks Canada, and Transport Canada will support efforts to broadly communicate information about the MPA. Members of the Gully Advisory Committee, all stakeholders and users will contribute to carrying out these activities.

Develop Education and Outreach Strategy: This long-term strategy will include details on the development of specific educational and outreach materials which target a variety of audiences. It will identify the interpretation objectives and define the tools and resources to deliver the materials and activities required. The strategy will describe required outreach materials for:

- user groups affected by the Regulations;
- educators; and
- the general public.

Outreach materials for key sectors: Materials targeted at key sectors that operate in or near the Gully, such as fisheries, shipping, and oil and gas, are a priority and will be developed. These will focus on the regulatory and management requirements related to the MPA. Some materials have been identified in previous sections of the Plan.

Curriculum materials: Information on the Gully will be prepared for school programs.

Materials for the general public: Printed materials, video, and online materials will provide knowledge of the Gully ecosystem and MPA to a broad audience. Tour guides will provide and interpret Gully material for visitors to the Bedford Institute of Oceanography, Dartmouth, NS.

National and international awareness: Participation in national and international forums will raise global awareness of the Gully MPA and will also be an opportunity for MPA managers to share their experience and knowledge. The MPA managers will document the steps taken to designate the Gully and lessons learned along the way.

Gully website: Information about the Gully will be available online to meet basic inquiries from the general public. The current website will be enhanced to include additional information on science activities, regulatory requirements, and all aspects of the implementation of the Plan.

REFERENCES AND RELATED MATERIALS

Ballast Water Control and Management Regulations. *Canada Gazette Part I,* Vol. 139, No. 24, June 11, 2005. Available online: *http://canadagazette.gc.ca/partI/2005/20050611/html/regle6-e.html*

Canadian Coast Guard. Notices to Mariners 1 to 46. Annual Edition. Available online: *<http://www.notmar.gc.ca/go.php?doc=eng/index>*

CNSOPB. 1997. Policies – Sable Gully. Available online: *http://www.cnsopb.ns.ca/environment/policies.html*

CNSOPB. 1997. Sable Offshore Energy Project Benefits Plan Decision Report, Development Plan Decision Report. Available online: *http://www.cnsopb.ns.ca/industrial/pdf/Benefits_CNS-SOE.pdf*

CNSOPB. 2003. Strategic Environmental Assessment of potential exploration rights issuance for eastern Sable Island Bank, western Banquereau Bank, the Gully Trough and the eastern Scotian Slope. Available online: *http://www.cnsopb.ns.ca/archives/pdf/GullySEAJune03.pdf*

DFO. 2001. New Emerging Fisheries Policy. Available online: *http://www.dfo-mpo.gc.ca/communic/fish_man/nefp_e.htm*

Fader, G.B.J. 2003. The mineral potential of the Gully Marine Protected Area, a submarine canyon of the outer Scotian Shelf. Geological Survey of Canada Open File 1634. Dartmouth, NS: Geological Survey of Canada.

Gully Marine Protected Area Regulations. *Canada Gazette Part II,* Vol. 128, No. 10, May 19, 2004. Available online: *http://gazetteducanada.gc.ca/partII/2004/20040519/html/sor112-e.html*

5

ADMINISTRATION OF THE MPA

This section provides an overview of the activities related to the administration of the MPA and identifies roles and responsibilities of DFO, other government departments, and the Gully Advisory Committee (GAC). The management of the Gully MPA is an ongoing commitment. Ongoing administration involves environmental and activity assessments and approvals; research; information management; surveillance, monitoring, enforcement and emergency response; and public consultation, education and stewardship programs.

5.1 ROLES AND RESPONSIBILITIES

Government and non-government organizations play a role in managing the Gully MPA and ensuring it is protected for future generations (Figure 5). There are roles and responsibilities related to legal requirements for both government departments and users of the area. However, others with an interest in the MPA can play a role through providing advice on management, carrying out research, undertaking outreach, or participating in stewardship activities in the MPA. Appendix 4 provides an overview of the key responsibilities of government departments and non-government bodies as they relate to the MPA.

GOVERNMENT ROLES AND RESPONSIBILITIES

Fisheries and Oceans Canada

DFO has the lead responsibility for oceans management in Canada and coordinates federal programs, policies, and management strategies related to the Gully. As the lead authority for the MPA, DFO has the primary responsibility for its protection and management. To date, the Department has invested significant program resources into the MPA planning, consultation, and designation process and will continue to invest in its long term protection.

DFO will implement the Plan and a range of supporting programs and functions. Core responsibilities for DFO include:

- implement and coordinate activities related to the management plan;
- promote compliance with Regulations among all user groups and other government regulators;
- monitor permitted activities within the MPA;
- coordinate and carry-out surveillance of the MPA and enforcement of the Regulations;
- provide outreach opportunities and materials;
- support and conduct research in the MPA; and
- evaluate and monitor management of the MPA to ensure objectives are met.

BOX 6. MONITORING

The term "monitoring" is used in a variety of ways in the Plan. Monitoring of the Gully includes:

- monitoring the health of organisms found in the Gully (baseline and trends);
- monitoring human activities to ensure they are in compliance with the Regulations, and
- monitoring effectiveness of management measures, against e.g., MPA objectives.

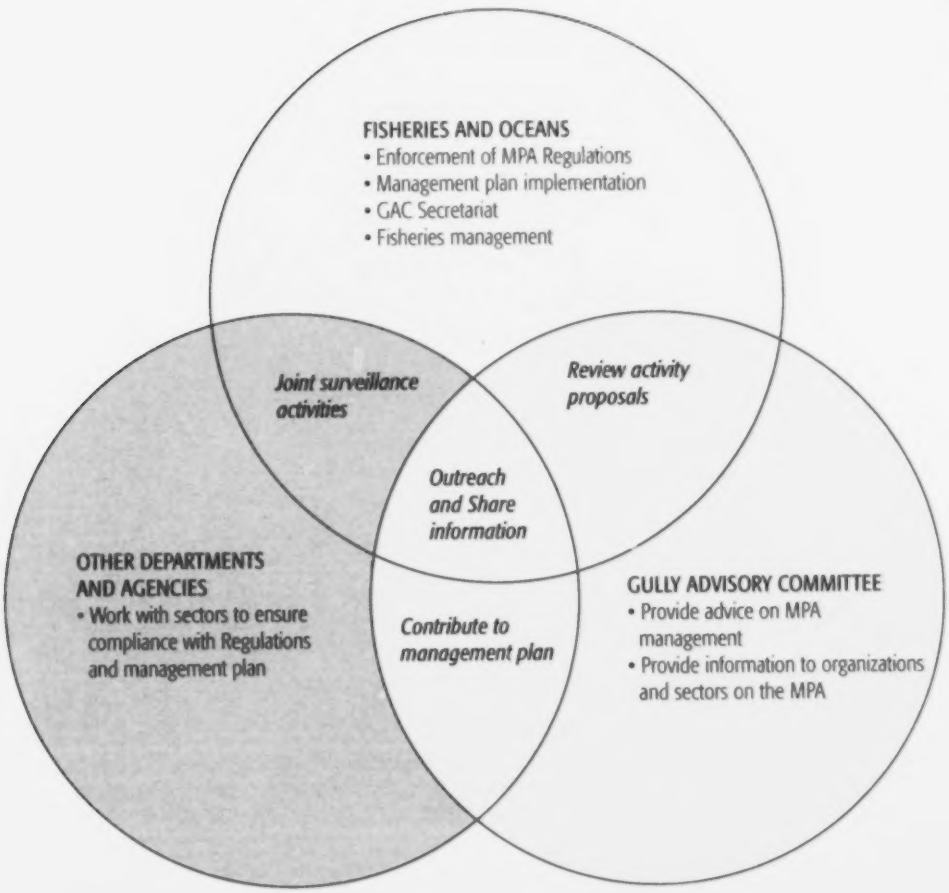

FISHERIES AND OCEANS
• Enforcement of MPA Regulations
• Management plan implementation
• GAC Secretariat
• Fisheries management
Joint surveillance activities
Review activity proposals
Outreach and Share information
OTHER DEPARTMENTS AND AGENCIES
• Work with sectors to ensure compliance with Regulations and management plan
Contribute to management plan
GULLY ADVISORY COMMITTEE
• Provide advice on MPA management
• Provide information to organizations and sectors on the MPA

Figure 5. Key roles and responsibilities related to the Gully MPA.

The Oceans and Coastal Management Division (OCMD) serves an overall facilitation and coordination function for management of the MPA and the implementation of the management plan. This role requires ongoing dialogue with regulators and various stakeholders and interests. A representative from OCMD serves as chair of the Gully Advisory Committee. OCMD provides ongoing advice to those considering activities in the Gully area and coordinates reviews of activity plans received through the plan submission process, including proposals for scientific research.

Other Government Departments

Although DFO has the overall responsibility for managing and administrating the MPA, several other departments and agencies also play a significant role in managing activities in and around the MPA (see Appendix 4 for a summary of responsibilities by department). Although each regulatory body has different responsibilities and interacts with different sectors, they have a common goal of promoting compliance with the Gully MPA Regulations. Various government agencies are also involved with other management strategies for the MPA. Core responsibilities for these departments as they relate to the Gully include:

- ensuring awareness and compliance of authorized activities with the Regulations;
- assisting DFO with compliance and surveillance activities;
- encouraging outreach and research activities, and

- raising awareness of the MPA and minimizing impacts from human activities.

Existing planning and regulatory approval mechanisms used to manage ocean activities will be used to facilitate compliance with the Regulations and communication of the Plan objectives. Section 4.3 earlier in the Plan describes some of the existing processes as related to each user group. For example, the project review processes required by the *Canadian Environmental Assessment Act* will be used to identify activities in the vicinity of the Gully and examine their compliance with the MPA Regulations.

In addition to their regulatory responsibilities, many government agencies have representatives on the Gully Advisory Committee (see below).

GULLY ADVISORY COMMITTEE

The ongoing participation and involvement of a variety of federal and provincial government bodies, industry, and public interests is essential to the protection of the Gully ecosystem. To facilitate ongoing dialogue and implementation of the Management Plan, DFO formed the Gully Advisory Committee (GAC) in 2003. GAC members represent government and non-government interests in the Gully and have skills, knowledge, and experience related to the ecology, management, conservation, and use of the area.

While the committee is recognized as a key mechanism for collaboration, it does not have legal or delegated powers from DFO. Moreover, it does not replace the regulatory mandate or decision-making authority of existing bodies or processes. It does not have decision-making authority related to the Regulations or any other Act of Parliament. The GAC provides advice to DFO and other regulators who make decisions related to the Gully and its management.

The GAC was involved with the MPA assessment requirements and establishment process, and continues to play a role in ongoing management of the MPA. The GAC:

- provides a regular forum to exchange information and views amongst a core group of government and non-governmental organizations with interests in the Gully;
- reviews the development of management plan components, regulatory proposals, and associated materials;
- provides advice to DFO on proposals for activities within the MPA boundary, and
- provides input into the activities of other organizations or bodies involved in the research, protection, and management of the Gully.

Future discussions may further develop the roles and responsibilities of the GAC. The terms of reference for the GAC will be posted on the Gully website once they are approved by the committee and DFO.

In March 2006, the GAC consisted of individuals from the federal and provincial governments, First Nations, the petroleum industry, fishing organizations, environmental organizations, and universities (Appendix 5). The OCMD-Maritimes Region, chairs and performs all administrative functions related to the GAC.

5.2 ONGOING ADMINISTRATIVE ACTIVITIES

A list of actions related to the ongoing administration and management of the Gully can be found in Appendix 2.

ENVIRONMENTAL AND ACTIVITY ASSESSMENTS AND APPROVALS

OCMD reviews environmental assessments for activities in the area of the Gully to ensure compliance with the MPA Regulations. They also review applications for approval of activities in the MPA. Activity applications will be provided to the Gully Advisory Committee for their feedback.

An application form for scientific activities in the Gully has been developed. OCMD will develop an application form for other activities.

OCMD will continue to provide guidance to proponents and regulators on the intent of the Regulations,

including guidance on key terminology (e.g., "disturb, damage and destroy," "vicinity," and "natural variation").

RESEARCH

OCMD will promote, and in some cases, fund scientific research. A research, and monitoring strategy will be developed that identifies research priorities for the MPA. Research funding, if available, will be allocated according to the research priorities. More details on the objectives for the research and monitoring strategy can be found in section 4.4.

INFORMATION MANAGEMENT

OCMD has developed a website with information on the Gully. The management plan and any associated strategies, activity approval information, and information on ongoing and completed research will be added to the website. The website will also include educational materials developed for the Gully.

PUBLIC CONSULTATION, EDUCATION, AND STEWARDSHIP PROGRAMS.

OCMD will consult with the public on the management plan and strategies associated with it. The plan will be available to the public. Meetings will also be held with interested groups.

An education and outreach strategy will be developed and implemented. Information on the Gully will be available through the website and through other methods identified in the strategy.

OCMD encourages stewardship activities and will develop stewardship agreements with user groups and others with an interest in the MPA.

SURVEILLANCE, ACTIVITY MONITORING, AND ENFORCEMENT

This section of the Plan identifies the key mandates, responsibilities and tasks for surveillance, activity monitoring and enforcement of the MPA. It also describes compliance promotion tools and approaches that will be used in support of the MPA.

Enforcement Responsibilities and Tasks

A coordinated and integrated approach to compliance and enforcement is required for the MPA given its remote offshore location, and the multiple nature of ocean use, management jurisdictions, and potential interactions and impacts in the area. The following section describes the lead enforcement role of Fisheries and Oceans Canada DFO/Canadian Coast Guard and the supporting roles of several other government authorities.

Fisheries and Oceans Canada (DFO)

As the lead federal authority for the MPA, DFO has overall responsibility for ensuring that the regulations and conservation measures are respected and enforced. This is undertaken through the Department's legislated enforcement mandate and responsibilities under the *Oceans Act*, the *Fisheries Act*, the *Species at Risk Act*, and other federal legislation covering fisheries conservation, environmental protection, habitat protection, and marine safety. DFO also provides a leadership and coordination role for broader inter-agency surveillance, monitoring, and enforcement activities in support of the MPA. Under this coordinated approach, DFO plays a support role for enforcement matters falling under the jurisdiction of other government authorities.

DFO Conservation and Protection

The primary means of surveillance and enforcement in the MPA is through DFO's fisheries conservation and protection program. The MPA is included as part of regular aerial surveillance patrols of the eastern Scotian Shelf region. During these patrols, fishing and other types of vessels in the MPA are investigated, recorded, and reported through the DFO's surveillance information system. Owing to the remote offshore location and the seasonal nature of fishing activities being monitored, dedicated and year-round coverage of the MPA is not achieved solely through DFO's fish-

eries surveillance program. Additional monitoring and information sources include fisheries observer reports, vessel logbooks, and automated vessel monitoring system (VMS) reports. Integrated computer programs have been developed to collect and analyze multiple sources of information to provide an operational picture of fishing activity in the MPA year-round. This operational picture is augmented by additional surveillance information on commercial shipping activity obtained through the DFO aerial surveillance program and in cooperation with Canada's Maritime Forces.

In addition to its general MPA enforcement activities, DFO is responsible for fisheries enforcement matters related to the MPA. This involves the enforcement of MPA exclusion requirements for the fleets and gear sectors operating in the surrounding area, and the enforcement of access conditions for the specific fleets allowed to fish in Zones 2 and 3 of the MPA. All fisheries access and conservation measures related to the MPA have been incorporated in DFO's resource management program through the use of individual licence conditions, variation orders and closures, and fleet-level conservation harvest plans. Fisheries violations can result in charges under both the *Fisheries Act* and the *Oceans Act* as Fishery Officers are designated as enforcement officers under both pieces of legislation.

In the case of marine research activities in the MPA, DFO will monitor compliance with access conditions through activity reporting provisions under the *Oceans Act*, the *Fisheries Act*, and the *Coasting Trade Act* (i.e., through the Foreign Vessel Clearance Request process). Violations of the MPA Regulations carry penalties under the *Oceans Act*, and contraventions of access authorizations and licences can also result in charges under the *Fisheries Act* and the *Coasting Trade Act*.

The enforcement provisions of the *Species at Risk Act* may also be used in support of the MPA when dealing with listed species, such as the northern bottlenose whale. Fishery Officers are designated as enforcement officers for the *Species at Risk Act* and may lay charges under this legislation, as appropriate.

Canadian Coast Guard

The Canadian Coast Guard provides support to MPA monitoring through its emergency response, vessel traffic management, and pollution surveillance programs. This includes the role of the Coast Guard to receive accident reports (as required under sec. 7 of the MPA Regulations) and coordinate government responses as required. The Coast Guard has included the MPA in its regional environmental response plan and will provide a leadership and operational role in the event of an environmental emergency.

The Coast Guard's Annual Notice to Mariners provides information on MPA conservation measures and specific guidance for transit to vessels in the area.

Supporting Roles: Other Agencies

In addition to DFO, a number of government authorities are involved in the surveillance, monitoring and enforcement of activities in the MPA. Under this coordinated, inter-agency system, each government authority operates according to its enforcement mandate and capabilities through existing cooperative arrangements or through new arrangements as required.

Based on current and expected ocean sector activities in and around the MPA, the key supporting enforcement agencies are Canada's Maritime Forces (Department of National Defence), the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB), Transport Canada and Environment Canada. Wherever possible, MPA-related tasks are incorporated into existing agency enforcement and compliance programs. General controls and conditions for ocean activities are implemented, monitored, and enforced through relevant management mechanisms, such as those for pollution prevention or hydrocarbon activity. For activities requiring involvement by multiple agencies, existing interdepartmental arrangements and Memoranda of Understanding (MOUs) are used to incorporate MPA enforcement considerations, where applicable. At the federal level, the Eastern Canada Interdepartmental Marine Operations Committee (co-chaired by DFO/Canadian Coast Guard and Canada's Maritime Forces) provides a mechanism to support inter-agency coordination.

MARLANT

Canada's Maritime Forces provide an important support role for the surveillance and monitoring of the MPA. MARLANT carries out surveillance patrols at the request of DFO using either long-range patrol aircraft or patrol frigates. This coverage occurs while en route to patrol areas or during surveillance operations in the surrounding area. In addition to providing an at-sea presence, the Maritime Forces play an important role in

the collating and sharing of surveillance data for all vessel activity in the area. The cooperation between DFO and the Maritime Forces is supported by a long-standing memoranda of understanding for assistance in fisheries surveillance and protection.

CNSOPB

Oil and gas exploration, developmen, and production activities in and affecting the MPA are regulated by the CNSOPB under federal-provincial accord legislation. The CNSOPB is responsible for ensuring industry compliance with MPA Regulations and management provisions through its monitoring, audit, and compliance/sanction system. The CNSOPB has a range of inter-agency arrangements in place for matters relating to environmental assessment, approvals, monitoring, and enforcement, including MOUs with DFO, Transport Canada, Environment Canada, and the Nova Scotia Department of Environment and Labour. Enforcement actions may occur jointly with these authorities for matters affecting their jurisdiction, such as pollution, ocean dumping, habitat protection and marine safety.

Transport Canada

Transport Canada is responsible for matters related to marine safety and the prevention of ship-source pollution in Canadian waters. These responsibilities are exercised through various regulations under the *Canada Shipping Act*, such as the Ballast Water Control and Management Regulations, and Canada's international commitments through the International Maritime Organization (IMO). In the case of a violation of the *Canada Shipping Act* or its regulations, Transport Canada will provide a lead enforcement role. However, Transport Canada and DFO will cooperate in the enforcement of violations under federal shipping legislation in or affecting the MPA as these may also be subject to penalties under the *Oceans Act*.

Environment Canada

Environment Canada is responsible for the enforcement of the pollution and wildlife protection provisions of the *Canadian Environmental Protection Act*, the *Fisheries Act*, the *Migratory Birds Convention Act*, and the *Species at Risk Act*, as well as the various regulations enacted under these pieces of legislation. In the case of environmental emergencies, Environment Canada plays a lead role through the inter-agency Regional Environmental Emergencies Team (REET), which is charged with assessing environmental incidents and advising on appropriate responses. As violations of federal environmental legislation that occur in or affect the MPA may also be subject to penalties under the *Oceans Act*, DFO and Environment Canada will cooperate in the enforcement process.

Compliance Promotion

In addition to government surveillance and enforcement programs, management activities will actively seek to promote compliance with the MPA Regulations. Compliance promotion is achieved through the use of best practice guidelines for various activities, the recognition and adoption of industry codes of practice, and promotion and development of stewardship initiatives. These compliance promotion tools can provide important contributions to meeting the objectives of the Regulations and this Plan. Marine user groups operating in the MPA (e.g., fishers, researchers, transiting vessels) or near the area (e.g., oil and gas companies) can contribute to the surveillance, monitoring, and reporting effort. This could be further promoted and supported through the future development of a "Gully Watch" program in conjunction with regulatory agencies.

Education and outreach exercises are important to inform current and potential user groups of the MPA objectives, Regulations, and management provisions. The Gully Advisory Committee provides a liaison with many users and other interest groups. As well, the education and communications components of the Plan provide for ongoing outreach activities that will assist in promoting compliance.

Performance Monitoring and Evaluation

The overall objective for the MPA compliance and enforcement strategy is to provide effective coverage of the area using existing surveillance, enforcement and compliance programs, arrangements, and capabilities of DFO and its partner agencies. As the MPA is recognized as a shared federal responsibility, MPA-related enforcement tasks will continue to be incorporated in the planning of relevant government compliance and enforcement programs wherever possible. Inter-agency coordination and planning is aimed at the efficient, cost-effective use of enforcement assets and capabilities. It also serves to demonstrate government interest, presence, and capabilities to enforce the conservation and management measures for the MPA. The use of compliance promotion tools helps to reduce the cost and resource requirements of the MPA enforcement effort, while engendering stewardship and shared

responsibility for the well-being of the MPA. The level of surveillance and monitoring coverage for the MPA will be evaluated on a regular basis to ensure that the Regulations are being respected and that compliance is being achieved. Knowledge of ocean use patterns will be used to adjust surveillance and presence levels as required. For example, additional coverage may occur during periods of increased fishing activity in and around the MPA. Inter-agency communications and planning with respect to MPA surveillance and enforcement requirements will occur on a regular basis. Incorporation of new surveillance technologies will also be considered, such as the increased use of Automatic Information Systems (AIS) for monitoring commercial vessels and Vessel Management Systems (VMS) for monitoring fishing vessels.

DFO recognizes that there are varying levels of knowledge and support for the MPA among user groups. However, it is anticipated that the high rate of compliance currently enjoyed will continue to be enhanced through the various strategies and approaches promoted by this Plan.

5.3 MANAGEMENT PLAN REVIEW

ANNUAL REPORTING

This management plan is intended to guide management of the MPA for the period 2008 to 2012. Each year, an annual report will set out accomplishments for the previous year as related to the objectives, priorities, and activities identified in the Plan. It will also identify priority activities for the upcoming year. Some of the ongoing and high priority activities are listed in Appendix 6. Adaptive management is a guiding principle for management of the Gully and management will consider the results from new research and implement new scientific advice where necessary on a continuous basis.

EVALUATION OF THE PLAN

A complete review of the Plan and its implementation will take place in 2010. The review will assess progress against the objectives for the Gully, track the implementation of activities identified in the management plan and subsequent annual reports, review priorities in light of events of the preceding years (e.g., results from new research, new activities), and will identify priorities for the next version of the management plan. The annual reports, which provide a form of ongoing review, will contribute to the complete review of the Plan.

A formal evaluation framework for ESSIM is in development and the review of the Gully management plan will draw from that framework where appropriate. The framework requires that indicators be identified for each MPA objective in order to track progress towards meetings those objectives. Once identified, these indicators will be reported on in the annual reports as well as in the overall review.

The overall evaluation of the Plan and its implementation will look at "outputs" (e.g., were the identified activities carried out?) and will also evaluate "outcomes" (e.g., as a result of carrying out the activities, were the objectives identified in the management plan met?).

To assist the management plan review, those involved with establishing and managing the MPA will report on lessons learned during the establishment and ongoing management of the MPA. This will assist in future management efforts and in the establishment of the MPA network across the country.

ADAPTIVE MANAGEMENT

The Gully Advisory Committee (GAC) is expected to provide ongoing feedback on the management plan and measures to implement the Gully MPA. If issues arrive over the next few years that require immediate adaptation of the Plan, those changes will be made in consultation with the GAC and appended to the Plan.

Appendix 6 lists ongoing and high priority activities for the Plan. More details on year-to-year activities will be provided to the GAC through an annual workplan. In addition, the annual reports will identify accomplishments for the preceding year and priorities for the upcoming year.

APPENDIX 1. GULLY MARINE PROTECTED AREA REGULATIONS[4]

GULLY MARINE PROTECTED AREA REGULATIONS

Gully Marine Protected Area Regulations
P.C. 2004-606 7 May, 2004

Her Excellency the Governor General in Council, on the recommendation of the Minister of Fisheries and Oceans, pursuant to subsection 35(3) and section 52.1 of the Oceans Act (see footnote a), hereby makes the annexed Gully Marine Protected Area Regulations.

INTERPRETATION

1. (1) In these Regulations, all geographical coordinates (latitude and longitude) are expressed in the North America Datum 1983 (NAD83) geodetic reference system.
(2) In Schedules 1 and 2, the lines connecting the points are rhumb lines.

DESIGNATION

2. The area of the Atlantic Ocean depicted in Schedule 1 – consisting of the seabed, the subsoil to a depth of 15 m and the water column above the seabed – that is bounded by a rhumb line drawn from a point 44°13'N, 59°06'W to a point 43°47'N, 58°35'W, then to a point 43°35'N, 58°35'W, then to a point 43°35'N, 59°08'W, then to a point 43°55'N, 59°08'W, then to a point 44°06'N, 59°20'W (which points are shown as points 1 to 6, respectively, in Schedule 1), and back to the point of origin, is hereby designated as a marine protected area to be known as the Gully Marine Protected Area.

MANAGEMENT ZONES

3. The Gully Marine Protected Area consists of the following management zones:
(a) Zone 1, as depicted in Schedule 2;
(b) Zone 2, as depicted in Schedule 2, consisting of the area surrounding Zone 1;
(c) Zone 3, as depicted in Schedule 2, consisting of the Gully Marine Protected Area, other than Zones 1 and 2.

PROHIBITED ACTIVITIES

4. Subject to sections 8 to 10, no person shall
(a) disturb, damage or destroy in the Gully Marine Protected Area, or remove from it, any living marine organism or any part of its habitat;
(b) disturb, damage or destroy in the Gully Marine Protected Area, or remove from it, any part of the seabed, including the subsoil to a depth of 15 m of the seabed; or
(c) carry out any activity – including depositing, discharging or dumping any substance, or causing any substance to be deposited, discharged or dumped – in the Gully Marine Protected Area or in the vicinity of that Area that is likely to result in the disturbance, damage, destruction or removal of anything referred to in paragraph (a) or (b).*

PLAN TO BE SUBMITTED

5. Subject to sections 10 and 11, every person who proposes to carry out an activity in the Gully Marine Protected Area must submit to the Minister for approval, not less than 60 days before beginning the proposed activity, a plan that indicates the management zone in which the activity is proposed to be carried out and includes*
(a) a statement of the purpose of the activity;
(b) a detailed description of the activity;
(c) the identity of every ship and aircraft proposed to be used during or in connection with the activity*;
(d) the proposed period or periods during which the activity will take place;
(e) the location of the activity, expressed in latitude and longitude;
(f) two copies of all plans and specifications relating to the activity;
(g) two copies of a report assessing the environmental impact of the activity on the Gully Marine Protected Area, including a consideration of any cumulative environmental effects that are likely to result from the activity in combination with any other past and current activities undertaken in or affecting that Area and any other anticipated activities that may be undertaken in or may affect that Area;
(h) a list of every licence, permit, authorization or consent obtained or applied for in respect of the activity; and
(i) the name, address and telephone number and, if applicable, the facsimile number and electronic mail address of the contact person.

6. (1) Subject to subsection (2), the Minister shall, within 30 days after receiving a plan submitted in accordance with section 5, approve the plan, subject to the following conditions, as applicable:
(a) in the case of scientific research or monitoring activities in Zone 1, the activities
(i) are to be carried out for the purpose of
(A) managing the Gully Marine Protected Area or monitoring the effectiveness of the conservation measures being implemented in that Area, or
(B) investigating incidents that may have an environmental impact on the Gully Marine Protected Area, or
(ii) are to be carried out for a purpose other than the purposes referred to in subparagraph (i) and will not result in any damage or destruction referred to in section 4 in Zone 1 or 2;
(b) in the case of scientific research or monitoring activities in Zone 2 or 3, the activities
(i) are to be carried out for the purpose of

[4] The Gully Marine Protected Area Regulations were amended in 2008. The asterisk (*) shows the text that was changed from the 2004 Regulations.

(A) managing the Gully Marine Protected Area or monitoring the effectiveness of the conservation measures being implemented in that Area, or
(B) investigating incidents that may have an environmental impact on the Gully Marine Protected Area, or

(ii) are to be carried out for a purpose other than the purposes referred to in subparagraph (i) and
(A) will not result in any damage or destruction referred to in section 4 in Zone 1 or 2, and
(B) will not result in any damage or destruction referred to in section 4 in Zone 3 or will only result in damage or destruction referred to in section 4 in Zone 3 that is within the natural variation of the ecosystem in which that Zone is located*; and

(c) in the case of any other activity in the Gully Marine Protected Area, the activity
(i) will be limited to Zone 3,
(ii) will not result in any disturbance, damage, destruction or removal referred to in section 4 in Zone 1 or 2, and
(iii) will not result in any disturbance, damage, destruction or removal referred to in section 4 in Zone 3 or will only result in disturbance, damage, destruction or removal referred to in section 4 in Zone 3 that is within the natural variation of the ecosystem in which that Zone is located.*

(2) The Minister shall not approve the plan referred to in subsection (1) if the cumulative environmental effects of the proposed activity, in combination with any other past and current activities undertaken in or affecting the Gully Marine Protected Area and any other anticipated activities that may be undertaken in or may affect that Area, are likely to result in disturbance, damage, destruction or removal that exceeds the parameters described in the conditions set out in paragraph (1)(a), (b) or (c), as applicable.

ACCIDENTS TO BE REPORTED

7. Any person involved in an accident that is likely to result in any disturbance, damage, destruction or removal prohibited under section 4 shall, within two hours after its occurrence, report the accident to the Canadian Coast Guard.*

EXCEPTIONS

8. Living marine organisms may be removed from Zone 2 or 3 if they are removed by the holder of a valid commercial fishing licence issued under subsection 7(1) of the Fisheries Act in the following circumstances:

(a) the licence is for swordfish, tuna or shark and the holder of the licence, when fishing for a species of fish authorized by the licence, complies with the terms and conditions of the licence;

(b) the licence is for groundfish and the holder of the licence, when fishing for halibut, complies with the terms and conditions of the licence; or

(c) the licence is a valid commercial fishing licence, other than a licence referred to in paragraph (a) or (b), and the holder of the licence, when fishing for a species of fish authorized by the licence,
(i) complies with the terms and conditions of the licence,
(ii) does not cause any damage or destruction referred to in section 4 in Zone 2,
(iii) causes only damage or destruction referred to in section 4 in Zone 3 that is within the natural variation of the ecosystem in which that Zone is located, and
(iv) removes living marine organisms from Zone 2 or 3 only to an extent that is within the natural variation of the ecosystem in which Zone 2 or 3, as the case may be, is located.

9. Paragraph 4(c) does not apply in respect of an activity carried out in the vicinity of the Gully Marine Protected Area if the disturbance, damage, destruction or removal referred to in that paragraph*
(a) is limited to Zone 3; and
(b) is within the natural variation of the ecosystem in which Zone 3 is located.

10. Sections 4 and 5 do not apply in respect of any movement or other activity of a ship, submarine or aircraft if the movement or other activity is carried out for the purpose of public safety, law enforcement or national security or for the exercise of Canadian sovereignty and
(a) the ship, submarine or aircraft is owned or operated by or on behalf of Her Majesty or by a foreign military force acting in cooperation with, or under the command or control of, the Canadian Forces; or
(b) the movement or other activity is carried out for the purpose of an emergency response under the direction, command or control of the Canadian Coast Guard.

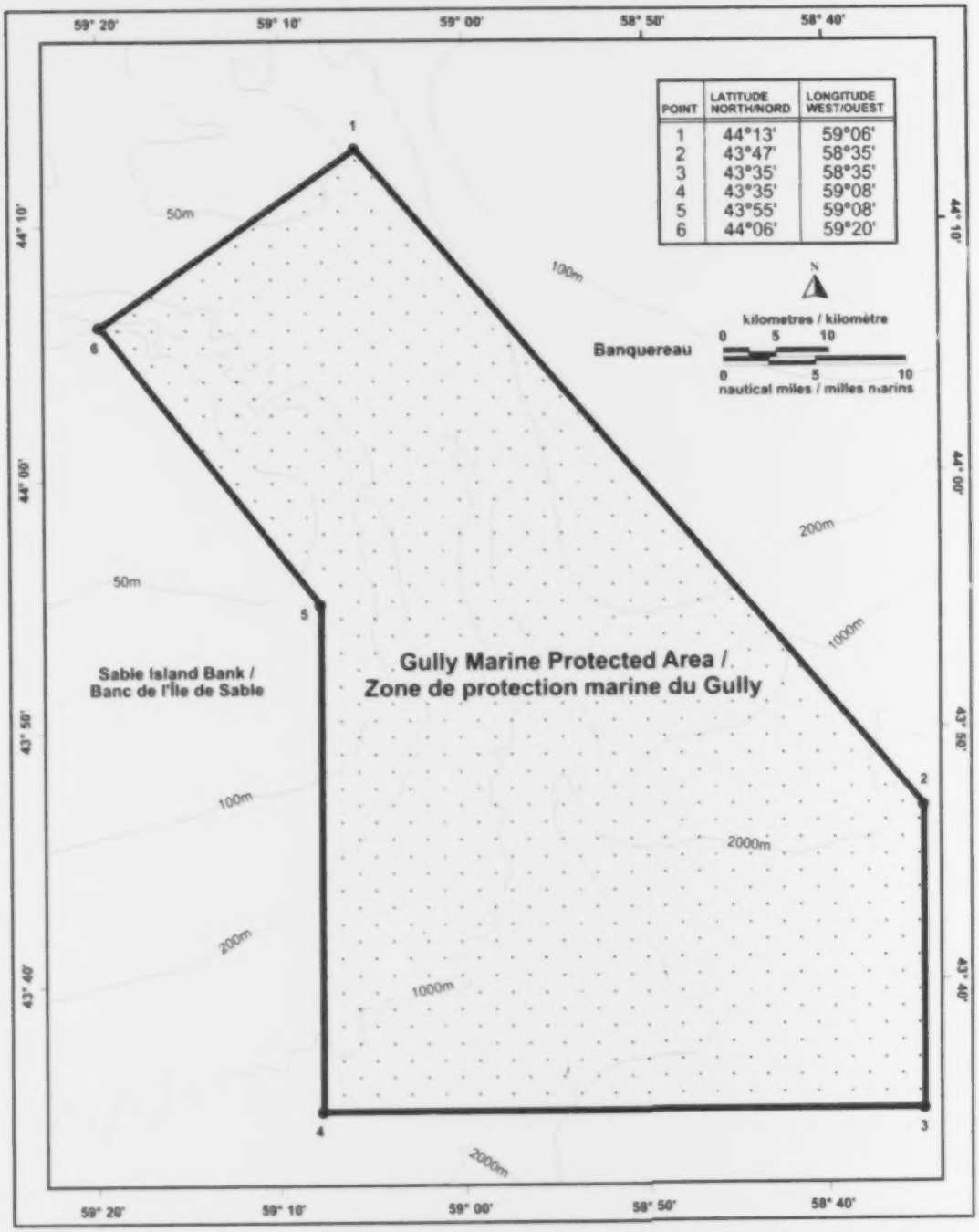
11. Section 5 does not apply in respect of
(a) fishing activities carried out in Zone 2 or 3 by the holder of a valid commercial fishing licence, issued under sub section 7(1) of the Fisheries Act, if the activities are carried out in a manner that complies with the terms and conditions of the licence;
(b) marine scientific research activities that are carried out or sponsored by a foreign government in the Gully Marine Protected Area and in respect of which that government has received the consent of the Minister of Foreign Affairs under paragraph 3(2)(c) of the Coasting Trade Act, if the activities are carried out in a manner that complies with the terms and conditions of the consent; or
(c) the activities of a ship that is exercising international navigational rights in the Gully Marine Protected Area and is not contravening the Canada Shipping Act or any requirements of the International Maritime Organization.

COMING INTO FORCE

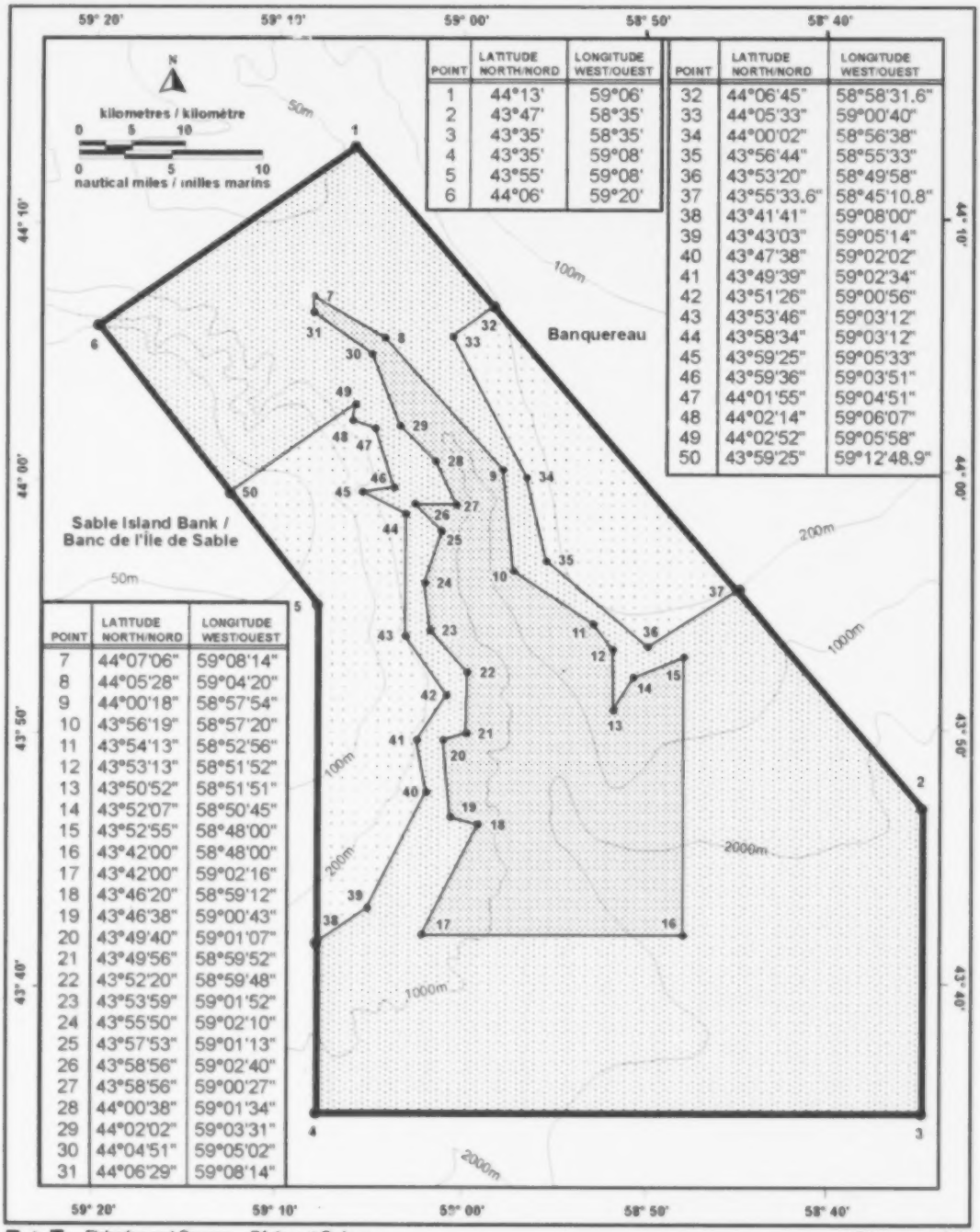
12. These Regulations come into force on the day on which they are registered.

[4] The Gully Marine Protected Area Regulations were amended in 2008. The asterisk (*) shows the text that was changed from the 2004 publication.

SCHEDULE 1 (Section 2) GULLY MARINE PROTECTED AREA



SCHEDULE 2 (Section 3) MANAGEMENT ZONES



POINT	LATITUDE NORTH/NORD	LONGITUDE WEST/OUEST
1	44°13'	59°06'
2	43°47'	58°35'
3	43°35'	58°35'
4	43°35'	59°08'
5	43°55'	59°08'
6	44°06'	59°20'

POINT	LATITUDE NORTH/NORD	LONGITUDE WEST/OUEST
32	44°06'45"	58°58'31.6"
33	44°05'33"	59°00'40"
34	44°00'02"	58°56'38"
35	43°56'44"	58°55'33"
36	43°53'20"	58°49'58"
37	43°55'33.6"	58°45'10.8"
38	43°41'41"	59°08'00"
39	43°43'03"	59°05'14"
40	43°47'38"	59°02'02"
41	43°49'39"	59°02'34"
42	43°51'26"	59°00'56"
43	43°53'46"	59°03'12"
44	43°58'34"	59°03'12"
45	43°59'25"	59°05'33"
46	43°59'36"	59°03'51"
47	44°01'55"	59°04'51"
48	44°02'14"	59°06'07"
49	44°02'52"	59°05'58"
50	43°59'25"	59°12'48.9"

POINT	LATITUDE NORTH/NORD	LONGITUDE WEST/OUEST
7	44°07'06"	59°08'14"
8	44°05'28"	59°04'20"
9	44°00'18"	58°57'54"
10	43°56'19"	58°57'20"
11	43°54'13"	58°52'56"
12	43°53'13"	58°51'52"
13	43°50'52"	58°51'51"
14	43°52'07"	58°50'45"
15	43°52'55"	58°48'00"
16	43°42'00"	58°48'00"
17	43°42'00"	59°02'16"
18	43°46'20"	58°59'12"
19	43°46'38"	59°00'43"
20	43°49'40"	59°01'07"
21	43°49'56"	58°59'52"
22	43°52'20"	58°59'48"
23	43°53'59"	59°01'52"
24	43°55'50"	59°02'10"
25	43°57'53"	59°01'13"
26	43°58'56"	59°02'40"
27	43°58'56"	59°00'27"
28	44°00'38"	59°01'34"
29	44°02'02"	59°03'31"
30	44°04'51"	59°05'02"
31	44°06'29"	59°08'14"

Fisheries and Oceans Canada / Pêches et Océans Canada

Canada

APPENDIX 2. LIST OF ACTIONS FOR THE PLAN
Priority Conservation Issues and Related Actions

ISSUE AND STRATEGY	ACTIONS	LINK TO REGULATIONS AND SPECIFIC ACTIONS BY SECTOR	
Issue: Protecting cetaceans from impacts caused by human activities. **Strategy: Minimize and manage harmful impacts and stresses from human activities on cetacean populations and their habitats.**	Actions: Eliminate activities that are known or likely to harm, disturb or kill whales, or damage or destroy their habitats within the Gully MPA. Carry out research on human activities where impacts on whales are uncertain, such as the impacts of different types of noise. Set strict guidelines for activities that could potentially impact whales or their habitats. Monitor the health of the Gully whale populations.	All sectors	MPA Regulations prohibit disturbance, damage or destruction in the Gully MPA. Some activities are excepted, but few activities can occur in Zone 1 (core habitat for northern bottlenose whales). Marine Mammal Regulations apply in the MPA, and Species at Risk prohibitions apply to listed cetacean species.
			Incidents involving marine mammals, such as vessel-cetacean collisions, must be reported to the Canadian Coast Guard.
		Oil and gas	DFO and the CNSOPB will develop Gully Protocols for oil and gas activities in the vicinity of the MPA.
			Companies operating near the Gully will be encouraged to adopt codes of practice (several are already in place).
			Studies will be conducted to better understand the sounds caused by the industry, acoustic pathways, and potential effects on animal behaviour (some research has been initiated).
		Fisheries	Reporting of whales caught or entangled with gear will be promoted.
			Interactions with cetaceans will be reduced by: • providing training and equipment to support proper identification and disentanglement of cetaceans • conducting hands-on research to understand what fishing methods reduce the incidence of entanglements
			Future fisheries proposed for Zone 3 of the MPA will undergo a full assessment, including an assessment of interactions with cetaceans.
		Research and monitoring	Researchers are required to submit applications to conduct research in the Gully.
			A code of conduct for research activities in the MPA, including guidelines for interactions with cetaceans, will be developed.
			A research and monitoring strategy for the MPA will be developed. This will include monitoring the health of whale populations.
		Marine navigation	Vessels are encouraged to avoid transiting the MPA.
			Guidelines for protecting marine mammals have been described in a Notice to Mariners.
			International Maritime Organization "Area to be Avoided" designation will be investigated for the Gully.
		Military operations	MARLANT standard operating procedures prohibit active sonar use by military vessels in MPAs.
			Military vessels must follow guidelines for marine navigation and scientific research unless carrying out excepted activities.

ISSUE AND STRATEGY	ACTIONS	LINK TO REGULATIONS AND SPECIFIC ACTIONS BY SECTOR	
			Potential effects of military sonar in the vicinity of the MPA will be investigated.
		Tourism, recreation, and education	DFO will contact relevant tourism operators and provide information on sensitivity of Gully and cetaceans found there. Educational research will be required to follow the same application process and guidelines as for scientific research.
Issue: Protecting seafloor habitat and associated benthic communities from alteration caused by human activities. **Strategy: Minimize disturbance of all benthic communities in the Gully MPA and provide high levels of protection for sensitive and important areas.**	Eliminate activities that are known or likely to harm benthic habitat within the Gully MPA. Carry out research to map benthic communities within the Gully and to identify the most sensitive and important areas. Set guidelines for human activities that could potentially impact benthic habitat and benthic animals. Monitor the health of the Gully's benthic communities to ensure they are being protected from human-caused impacts.	All sectors	Disturbance, damage, or destruction of living marine organisms and seabed is prohibited. Some activities are excepted. Activities within Zone 3 may be permitted if the disturbance is not beyond the natural variation of Zone 3.
		Oil and gas	DFO and the CNSOPB will develop Gully Protocols for oil and gas activities in the vicinity of the MPA. Future pipeline routing will exclude the MPA.
		Fisheries	For fisheries permitted in the MPA, steps to reduce fishing interactions with corals in the MPA, including coral bycatch, will be investigated. Future fisheries proposed for Zone 2 and 3 of the MPA will undergo a full assessment, which will include an assessment of benthic impacts.
		Research and monitoring	Researchers are required to submit applications to conduct research in the Gully. A research and monitoring strategy for the Gully will be developed. This will include surveying and monitoring of benthic communities. A code of conduct for research activities in the MPA will be developed.
		Military operations	Military activities must follow guidelines for marine navigation and scientific research unless carrying out excepted activities.
		Submarine cables	A policy on avoiding the Gully will be developed in collaboration with industry and regulators.
		Tourism, recreation and education	Educational research will be required to follow the same application process and guidelines as for scientific research.
Issue: Maintaining or restoring the quality of the water and sediments of the Gully.	Set guidelines for the Gully for temperature, salinity, and other environmental variables that fall within the range of natural variability.	All sectors	Any activities that are permitted within Zone 3 of the MPA must fall within the natural variability of the ecosystem of that zone.
		Oil and gas	Protocols for oil and gas activities near the MPA will be developed. Activities in the vicinity of the Gully may be required to develop environmental effects monitoring programs.

ISSUE AND STRATEGY	ACTIONS	LINK TO REGULATIONS AND SPECIFIC ACTIONS BY SECTOR	
Strategy: Maintain and restore (where necessary) the quality of water and sediments of the Gully within the range of natural variability.	Set guidelines for the Gully for levels of contaminants that fall within the range of natural variability. Monitor human activities in the MPA and in nearby areas to ensure they are meeting the standards established in the guidelines. Monitor the health of certain indicator organisms within the MPA to ensure water and sediment quality is being maintained.	Fisheries	Future fisheries proposed for Zone 2 and 3 of the MPA will undergo a full assessment, including effects on environmental quality.
		Research and monitoring	A research and monitoring strategy for the Gully will be developed, which will include: • monitoring to ensure activities meet guidelines • monitoring the health of indicator organisms
			Fate transport models will be developed that address whether discharges in the vicinity of the Gully will reach the MPA.
			Biota, substrate, and the water column will be monitored for contaminants.
		Marine navigation	Vessels must avoid releasing discharges in the MPA.
			Vessels should avoid discharges within 50 km (27 NM) of the MPA.
			A vessel traffic analysis and monitoring system will be developed for the MPA.
			Circulation models for the Gully will be refined to better understand risks from potential vessel discharges.
		Military operations	A Maritime Command Order prohibits depositing of substances in MPAs.
Issue: Conserving other commercial and non-commercial living resources. **Strategy: Monitor and respond to impacts of human activities on other commercial and non-commercial living resources to ensure that these activities are consistent with the objectives of the MPA.**	Monitor human activities in the MPA and in nearby areas and assess their impacts on the MPA. Exclude ballast water exchange from the Gully MPA and surrounding area. Take management action if particular activities are shown to have an adverse affect on the MPA. Carry out research to better understand the Gully food web and the MPA's links with surrounding areas.	Oil and gas	Environmental assessments for activities in the vicinity of the Gully will be required to assess possible impacts on the MPA.
			Activities in the vicinity of the Gully may be required to develop environmental effects monitoring programs.
		Fisheries	DFO will monitor and assess the impacts of permitted fisheries on the biodiversity of the canyon ecosystem: • monitoring and reporting on catch composition • collaborating with industry • directing observer coverage
			DFO will monitor impacts of permitted fishing activities on species on the List of Wildlife Species at Risk.
			Future fisheries proposed for the MPA will undergo a full assessment, including impacts on biodiversity.
		Research and monitoring	Researchers are required to submit applications to conduct research in the Gully.
			A research and monitoring strategy for the Gully, including research to better understand the Gully food web and links with other areas will be developed.
		Marine navigation	Ballast water exchange in the Gully will be prohibited through proposed regulations under the *Canada Shipping Act*.
		Tourism, recreation, and education	Educational research will be required to follow the same application process and guidelines as for scientific research.

Other actions to meet regulatory requirements and promote understanding of the Gully

Theme	Link to Regulations and action by OCMD, regulators, and Gully Advisory Committee.
Activity assessments and approvals	An application form for scientific research in the Gully has been developed.
	OCMD will develop an application form for non-research activities in the Gully.
	OCMD will review activity applications and will provide to GAC for their comments.
	OCMD will work with other regulators to provide clarity on key terms in the Regulations for particular sectors.
	A full assessment procedure for fisheries proposed for the MPA will be developed.
Research and information management	A research and monitoring strategy will be prepared for the MPA.
	A Gully MPA Science Advisory group will be established.
	A Gully science symposium will be initiated.
	Codes of conduct for research and monitoring will be developed.
	Funding for priority research activities will be identified and solicited.
	Collaborative research will be fostered. (e.g., with various government departments and universities)
	Research and monitoring results will be disseminated.
Education and stewardship	Outreach materials will be developed aimed at those permitted to fish in the MPA.
	Meetings will be held with fishing licence holders to discuss regulatory requirements for MPA.
	A guide will be prepared for researchers to advise them of the regulatory requirements for the MPA and to guide them through the research application process.
	Information will be prepared for mariners to raise awareness of the regulatory requirements.
	The Gully website will be updated to include the Plan, associated strategies, codes of conduct, guidelines, educational materials, and other information on the Gully.
	Participation in national and international forums to raise awareness of the MPA and share experience and knowledge will be supported.
	Opportunities will be sought to work with the media on film, television, and print products related to the Gully.
Surveillance and enforcement	DFO will coordinate a meeting on surveillance of the Gully with others who carry out surveillance activities in the offshore (e.g., DND, Transport Canada).
	An annual surveillance and enforcement report will be produced.
	Surveillance of the MPA will be conducted in collaboration with the key regulatory agencies, with enhanced surveillance at particular times of year to reflect seasonal fishing activity.
	Work will continue on the development of an integrated fisheries monitoring and reporting system.
	Enhanced reporting of fishing locations will be encouraged.

APPENDIX 3. THREATS TO CETACEANS IN THE GULLY

Whale Threats	Description of Issue
Acoustic pollution	Acoustic pollution has the potential to interfere with many of the normal behaviours of cetaceans including movements/navigation, feeding, and reproduction. The effects vary between baleen and toothed cetacean species. Primary/potential sources of noise on the Scotian shelf include: • petroleum exploration (geophysical surveys) and production • commercial shipping and other vessels • aircraft • naval activities A review of this issue specific to The Gully was conducted by DFO in 2000. Since then, new research has been carried out on this issue.
Entanglements in fishing gear	Cetaceans that become entangled in gear may drown or become unable to perform important functions, including feeding. Data and information on the incidence of this problem in the Canadian offshore is generally lacking. In a recent review of incidental catch in the Canadian Atlantic large pelagic longline fishery, cetacean entanglements were shown to be a rare occurrence. In August 1999, researchers encountered an entangled young male northern bottlenose whale in the Gully. The whale was located in the deep canyon portion of the Gully, although it is not known where it initially encountered the gear.
Vessel collisions	Cetaceans are struck when they fail to detect or are unable to avoid an oncoming vessel. The level of impact on cetaceans from a vessel strike is dependant on the size, type, and speed of the vessel. The risks associated with ship collisions are increased in areas of cetacean concentration, such as the Gully. There has not been a documented ship strike in the Gully and the effects on northern bottlenose whales are unknown.
Harassment	Vessel presence can affect whale behaviour. Pursuing marine mammals can lead to ill-health and potentially, mortality by changing or interfering with normal behaviour or by forcing animals away from their habitat during critical times of the year. Harassment of marine mammals is a violation under the *Fisheries Act*.
Loss of prey species	Cetaceans consume large amounts of a wide variety of species in The Gully region. Reduced levels of these species through natural or human causes may impact whale health.

APPENDIX 4. ROLES AND RESPONSIBILITIES
Key Roles and Regulatory Responsibilities for Managing Marine Activities[5]

REGULATORY OR ADVISORY BODY	REGULATORY RESPONSIBILITIES	ROLE AND RESPONSIBILITIES RELATED TO THE GULLY MPA
Fisheries and Oceans Canada (DFO)	Lead responsibility for Canada's oceans. Develops network of Marine Protected Areas and administer MPA Regulations (*Oceans Act*). Leads and facilitates the development and implementation of integrated management plans (*Oceans Act*). Carries out marine science (*Oceans Act*). Regulates fisheries (*Fisheries Act*). Protects fish habitat (*Fisheries Act*). Protects critical habitat and develop recovery plans for aquatic species at risk (*Species at Risk Act*). Responsible for marine safety and security (Canadian Coast Guard).	Lead role in MPA. Coordinates management of the Gully and implementation of the management plan. Chair of Gully Advisory Committee. Responsible for activity approvals. Carries out surveillance of activities. Provides information to industry (in cooperation with their regulators) and the public on the MPA. Maintains Gully MPA website. Carries out research in the MPA.
Canada-Nova Scotia Offshore Petroleum Board (CNSOPB)	Lead regulatory agency for petroleum activities and resources in the Nova Scotia offshore area (*Canada Nova Scotia Implementation Accord Act*). Responsible for safe working conditions, promotion of environmental protection during offshore petroleum exploration and development, management and conservation of offshore petroleum resources, and ensuring compliance with accords and regulations.	Ensures petroleum activities are done in accordance with the Regulations and the management plan. Provides DFO with information on activities in the vicinity of the MPA.
Environment Canada	Responsible for limiting pollution and discharges into the marine environment and managing disposal of waste at sea (*Fisheries Act*; *Canadian Environmental Protection Act*). Manages environmental emergencies. Monitors and protects migratory birds (*Migratory Birds Convention Act*). Key responsibilities for species at risk (*Species at Risk Act*).	Ensures ocean disposal sites and other authorized disposal of waste at sea will not impact the MPA. If an environmental emergency occurred in the Gully or surrounding area, would coordinate management and clean-up activities. Assists DFO with SARA responsibilities.
Canadian Environmental Assessment Agency	Administers and promotes compliance with the federal environmental assessment process, assists in the process, and promotes sound environmental practices.	Where needed, assists with environmental assessments carried out in the vicinity of the Gully.
Transport Canada	Responsible for ship safety and ship source pollution prevention for all commercial and fishing vessels (*Canada Shipping Act*). Regulates ballast water discharges.	Administers Ballast Water Control and Management Regulations.

[5] This is a brief overview of the primary responsibilities in oceans management and is not meant to list all roles and responsibilities for each agency in relation to the marine environment. More than 30 government agencies have some role in ocean policy and governance in Canada.

Key Roles and Regulatory Responsibilities for Managing Marine Activities[5]

REGULATORY OR ADVISORY BODY	REGULATORY RESPONSIBILITIES	ROLE AND RESPONSIBILITIES RELATED TO THE GULLY MPA
Industry Canada	Responsible for telecommunications, including licences for submarine cables (*Telecommunications Act*).	Ensures submarine cable licensing proposals are in accordance with the Regulations and management plan.
Department of National Defence (MARLANT)	Responsibility for matters relating to national defence (*National Defence Act*). Conducts search and rescue missions. Assists other government departments in fisheries patrols and monitoring the oceans environment.	Assists with surveillance and enforcement of MPA regulations through patrols. Ensures their activities are carried out in accordance with the MPA Regulations and management plan.
Natural Resources Canada	Responsible for administration of non-fuel offshore mineral interests. Carries out marine geoscience research.	Carries out research to support understanding of ecosystem.
Department of Foreign Affairs and International Trade (DFAIT)	Administers *Coasting Trade Act* which provides access to Canadian waters for foreign researchers.	Receives foreign research applications for the Gully area and sends to DFO for review to ensure they meet the Regulations.
International Maritime Organization	*Convention on the International Maritime Organization* (Canada is a signatory).	Established to allow for cooperation between countries with ships conducting international trade, it aims to improve maritime safety and prevent marine pollution caused by shipping.
Eastern Scotian Shelf Integrated Management Initiative	Develops and implements an integrated management plan for the eastern Scotian Shelf, including the area around the Gully.	Ensure that ecological sensitivities of the Gully are considered in developing the ESSIM plan.
Gully Advisory Committee (GAC)	n/a	A multi-stakeholder group that provides advice to DFO on managing the MPA. Meetings of the committee provide a forum for communicating information and concerns about The Gully MPA.
Others		Other groups (e.g., industry or user groups, university researchers, non-government organizations) play a role by complying with the Regulations, promoting awareness of the Gully, and carrying out research that increases understanding of the Gully ecosystem.

APPENDIX 5. GULLY ADVISORY COMMITTEE MEMBERS (2006/07)

Chair

Oceans and Coastal Management Division,
Fisheries and Oceans Canada

Secretariat

Oceans and Coastal Management Division,
Fisheries and Oceans Canada

Members

Canada-Nova Scotia Offshore Petroleum Board

Canadian Coast Guard

Canadian Parks and Wilderness Society (Nova Scotia Chapter)

Canadian Wildlife Service

Clearwater Seafood

Community/fishing representative

Dalhousie University

Department of National Defence

Ecology Action Centre

EnCana

Fisheries and Aquaculture Management Branch,
Fisheries and Oceans Canada

Frontier Lands Division
Natural Resources Canada

Geological Survey of Canada (Atlantic)
Natural Resources Canada

Marathon Canada

Nova Scotia Department of Agriculture and Fisheries

Nova Scotia Department of Energy

Nova Scotia Swordfishermen's Association

Saint Mary's University

Science Branch,
Fisheries and Oceans Canada

Seafood Producers Association of Nova Scotia

Shell Canada

Parks Canada

Unamaki Institute of Natural Resources

World Wildlife Fund

APPENDIX 6. PRIORITY ACTIVITIES

OVERVIEW: 2008-09

For 2008-2009, activities will focus on the management plan review, on developing draft research and education strategies, and on raising awareness of the MPA and its associated Regulations among the various users and stakeholders. These activities will help meet the objectives for The Gully MPA and address the priority conservation issues.

ONGOING/COMPLETED ACTIVITIES (SINCE MPA DESIGNATION, 2004)

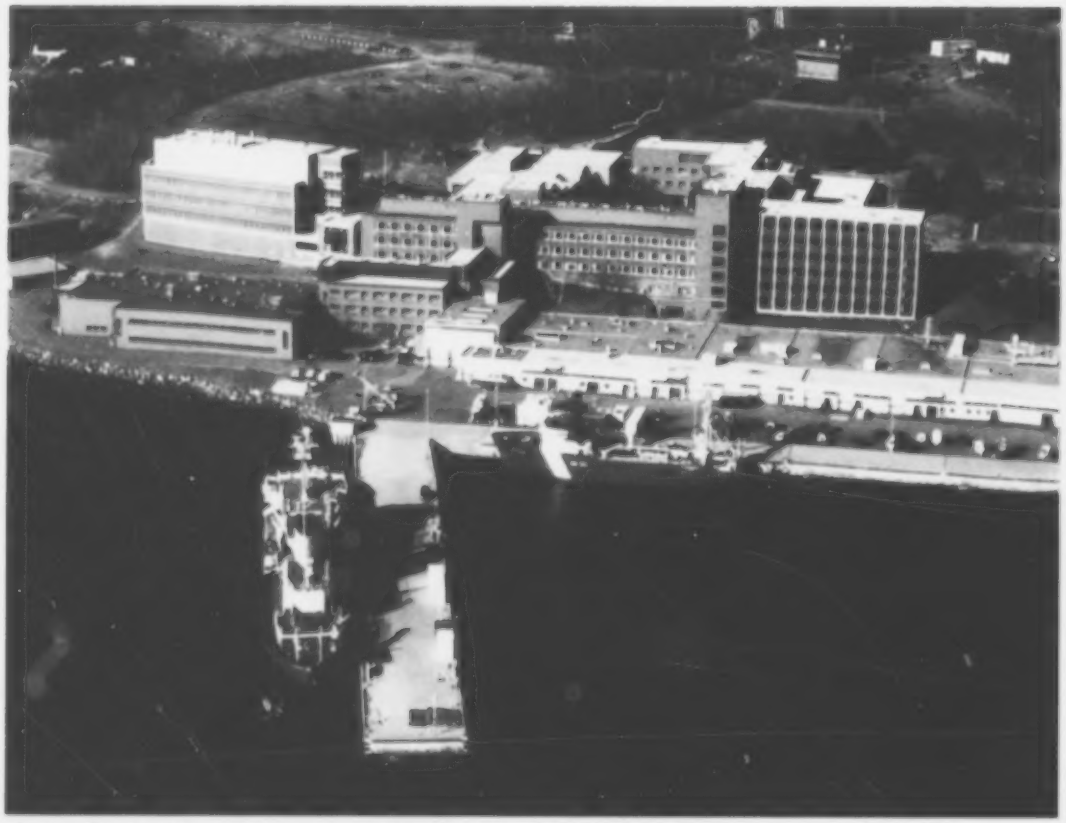
- Gully secretariat role established within OCMD.
- Research approval form developed.
- Research proposals reviewed by Gully Secretariat and GAC.
- Some research activities have been initiated in the MPA.
- Some priority research has been funded.
- Draft management plan has been prepared.
- Educational materials prepared on the Gully.
  - Gully outreach room at BIO.
  - Northern bottlenose whale scale model.
- Regular meetings with surveillance and enforcement staff held.
- A Notice to Mariners was developed with guidelines for marine protected areas.
- Canadian Hydrographic Service charts were updated to show the MPA boundary.
- Development of an integrated fisheries monitoring and reporting system was initiated.
- Review the draft management plan with the GAC and revise based on their input.

FUTURE ACTIVITIES (SHORT-TERM)

- Develop regular meeting schedule for the Gully Advisory Committee (at least two times per year).
- Hold an annual coordinating meeting on surveillance and enforcement with agencies involved in monitoring the offshore (DFO, Transport Canada, Environment Canada, Department of National Defence).
- Produce reports on the Gully MPA, including activities completed/initiated, research that has taken place, and a surveillance and enforcement update.
- Continue to monitor activities occurring in The Gully MPA.
- Raise awareness of The Gully MPA (e.g., Regulations, what they mean for each sector, environmental values of The Gully), particularly among users of the area.
  - hold meetings
  - distribute summary of management plan
  - prepare and distribute summaries pertinent to each sector
  - update notice to mariners
- Develop an educational strategy for the Gully in consultation with stakeholders and educators.
  - develop public education materials
- Prepare a research and monitoring strategy identifying priorities for research.
  - priority research includes research on sound and northern bottlenose whales in The Gully and this has been initiated
  - some monitoring programs will be initiated or required from users
  - other research may be approved for this year on an ad-hoc basis
- Establish a Gully MPA Research Advisory group.
- Initiate the development of codes of conduct for research and monitoring.
- Secure funding for research program.
  - Select research to fund based on identified priorities.
- Review activities occurring in the area near the Gully to determine if they comply with the Regulations.
- Hold a forum, e.g., workshop, to present and discuss preliminary research findings from recent Gully research.

FUTURE ACTIVITIES (LONG-TERM)

- Revise "the Gully Ecosystem" to take into account research results.
- Review and evaluate management plan.
- Revise management plan.



The Bedford Institute of Oceanography, photo by Jo-Ann Naugler

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